ORGANIZE YOUR SHOP THIS WEEKEND! p.40

ISSUE 200 OCTOBER 2010

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13 PROJECTS!

- Bread Dipping Trays p.66
- Lighted Pedestal p.62
- Candle Holders p.54
- Turned Bowls p.34
- Tape Dispenser p.24

...and more

Cozy Bench

p.28

Build it easily with only basic tools!

54 Shop Tips Inside

Can ONE router do it all? We shop-test 9 to find out p.56

Lumber: Get it Cheap or Get it Easy p.71

6 ways to spot-on tablesaw crosscuts p.38

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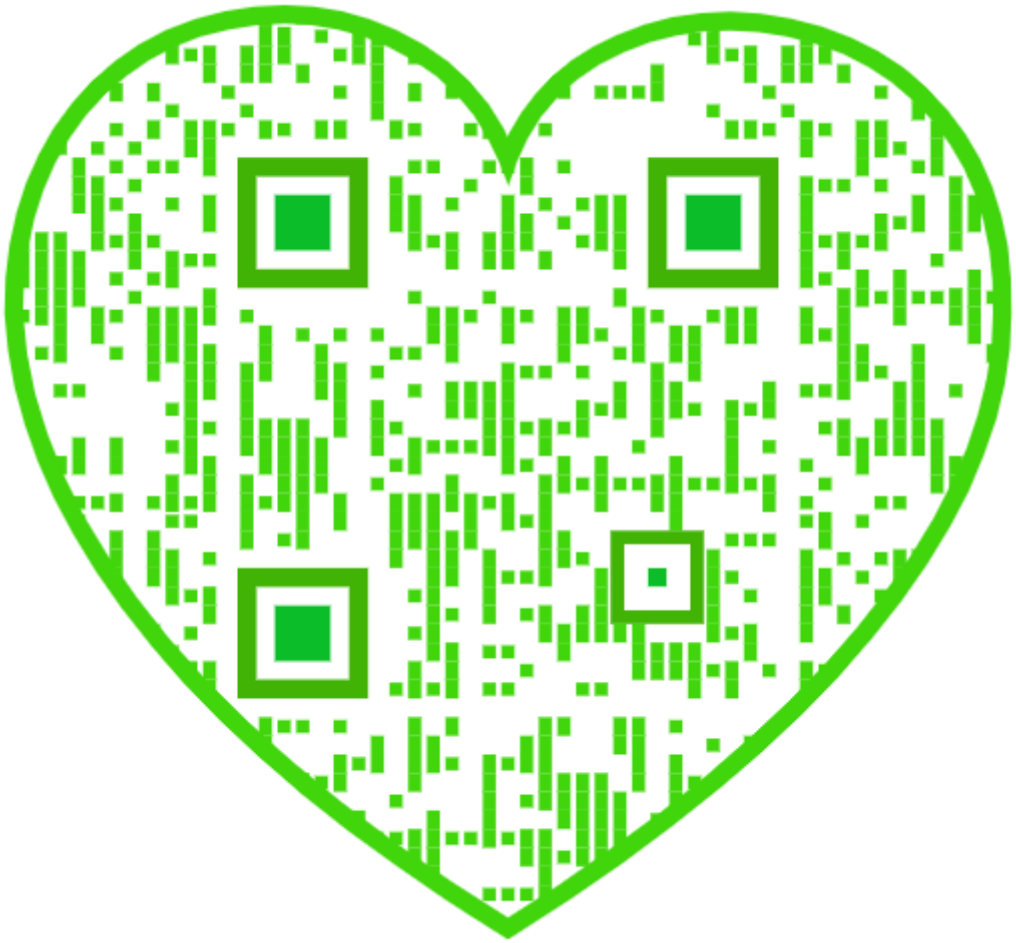

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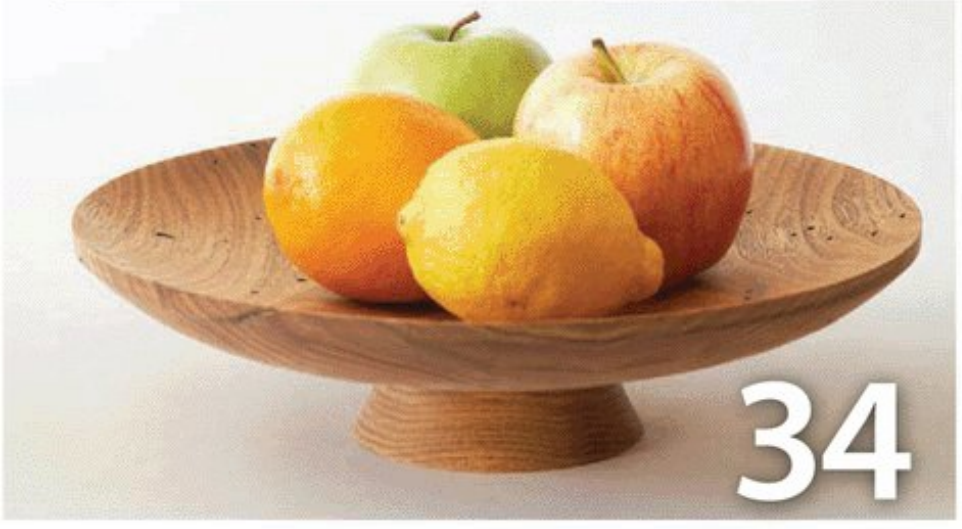

PROJECTS

20 **Simple Miter-Gauge Stop for Long Parts**
24 **Shop-Made Tape Dispenser**
28 **Easy Arts-and-Crafts Bench**
34 **Turned Bowl Set**
Beautiful, and a great project for beginning turners.
54 **Scrapwood Project: Candle Holders**
62 **Luminous Display Pedestal**
66 **Reader Project: Bread-Dipping Tray**

SKILL BUILDERS

14 **Joinery: Through-Mortise and Tenons**
38 **How to Make Dead-On Tablesaw Crosscuts**
40 **Shape Up Your Shop!**
Organization strategies you can use today.
49 **Dado Duel: Bits vs. Blades**
A head-to-head battle to learn the best method.

TOOLS & MATERIALS

26 **Get the Gunk Out of Your Tablesaw**
56 **Shop Test: Do-It-All Routers**
71 **Wood-Buying Options, from Cheap to Easy**
74 **Wise Buys: Portable Mitersaw Stands**
84 **Shop-Proven Products**
Slop-free jig guides and benchtop router table.

DEPARTMENTS

6 **Editor's Angle**
8 **Sounding Board**
10 **Shop Tips**
22 **Shop Monkey: The Importance of Practice**
76 **Ask *WOOD***
92 **What's Ahead**

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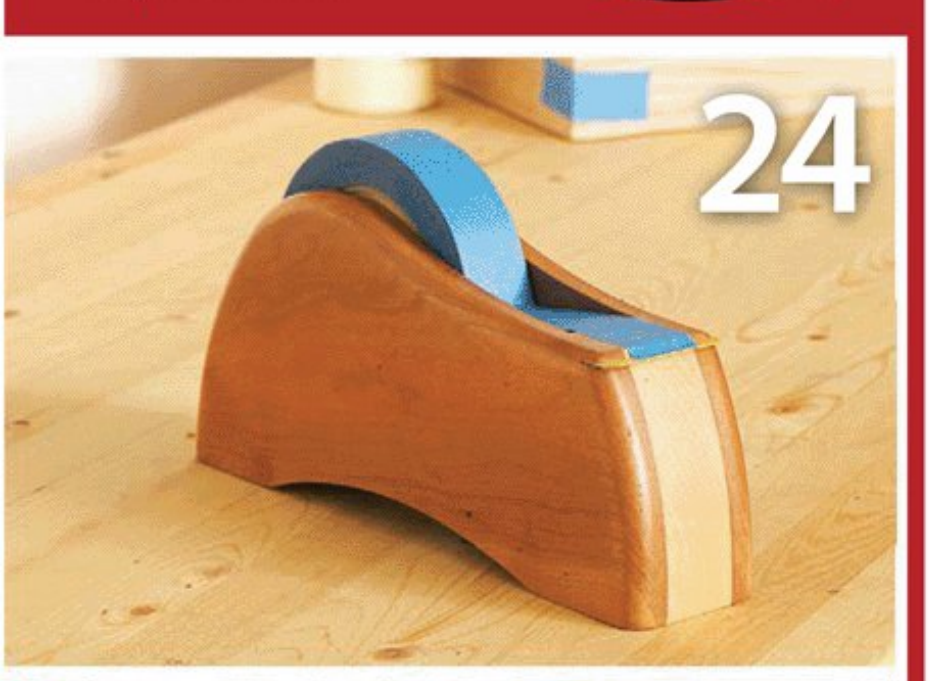

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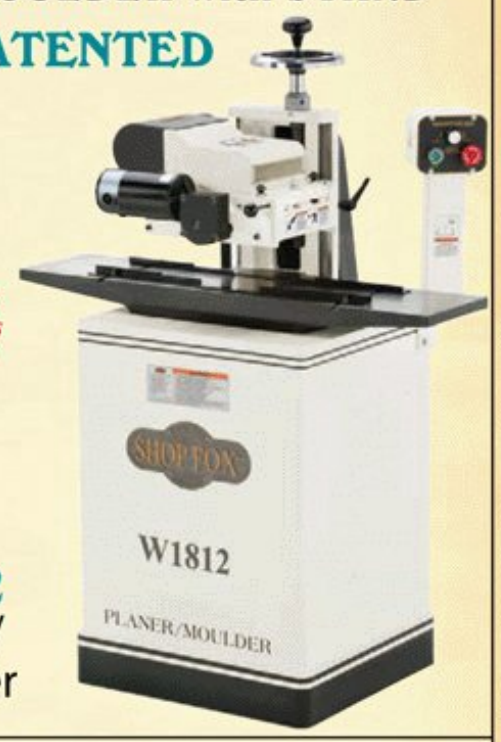
W1816 Dust Collector

VARIABLE SPEED PLANER/MOULDER with STAND

PATENTED

- Motor: 2 HP, 220V, single-phase
- Precision ground cast iron table & wings
- Table size with wings: 36¼"L x 10"W
- Max. cutting width: 7"
- Max. planing height: 7½"
- Max. planing depth: ⅛"
- Max. moulding depth: ¾"
- Knife size: 7⅛" x 1½" x ¼" HSS
- Cutterhead speed: 7000 RPM
- 4" dust port
- Approx. shipping weight: 330 lbs.

We also carry an extensive selection of moulding knives for this machine!



W1812 Planer/ Moulder

8" JOINTER
with Parallelogram Adjustable Beds

- 3 HP, 220V, single-phase, TEFC motor
- Precision ground cast iron parallelogram design table measures 8" x 76⅝"
- Cutterhead speed: 5350 RPM
- W1741 cutterhead: 4 HSS knives
- W1741S cutterhead: 4 rows, 74 carbide inserts
- Rabbeting capacity: ⅝"

Built-in Mobile Base

W1741 8" Jointer
W1741S with Spiral Cutterhead

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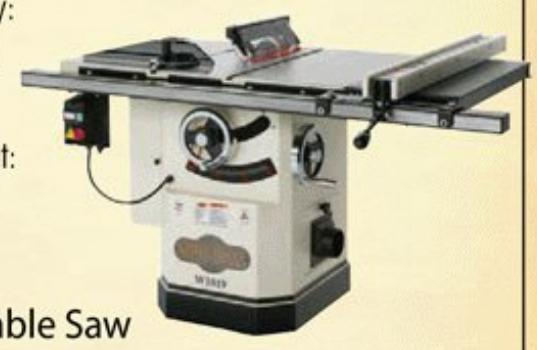
W1742S 15" Planer
W1754S 20" Planer

10" TABLE SAWS with Riving Knife

New

- 3 HP, 220V, single-phase motor
- Cast iron table size: 27" x 40¼"
- Table size with extension: W1819 - 27" x 53⅝", W1820 - 27" x 74⅜"
- Arbor: ⅝", 4300 RPM
- Max. rip capacity: W1819 - 29½", W1820 - 50"
- Max. depth of cut: 3⅛" @ 90°, 2³⁄₁₆" @ 45°

Free 10" Carbide-Tipped Blade



W1819 10" Table Saw
W1820 10" Table Saw with Long Ext. Table

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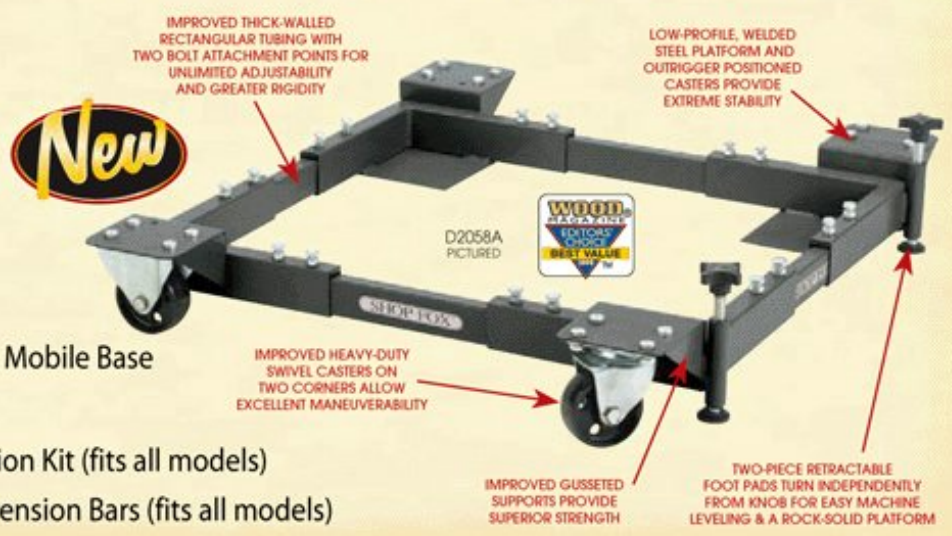
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Marlen turned these paperweights from maple burl and filled them with lead shot. See how at woodmagazine.com/paperweight

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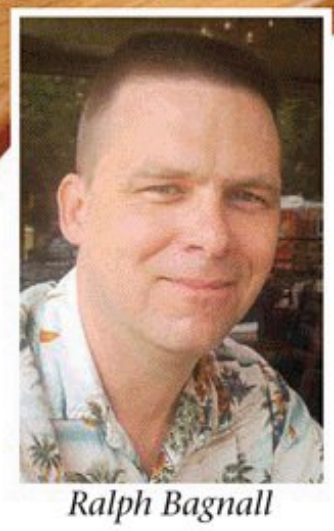
Editor's Angle

Be a part of *WOOD*®!

This issue marks the start of several new ways to see your best projects and ideas published.



Ralph Bagnall

The *WOOD* Magazine team of editors, project designers, artists, and craftsmen is a talented lot for sure, but we don't pretend to have a corner on the market for woodworking creativity. Just go to our Web site, woodmagazine.com, and you'll see what I mean: Thousands of woodworkers from around the world regularly contribute fantastic project ideas and advice in the form of gallery images, shop-shot videos, and forum posts. I guarantee you, some of what's on the site we could not have dreamed up in a hundred years.

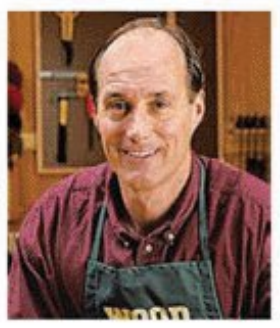
Of course, long before the Internet was even a remote concept, we tapped into our readers' creativity (and rewarded it with tool prizes and cash) by publishing your best shop tips, jigs, and organizers, and we still do. But now we also want to publish in the magazine your best projects—everything from indoor and outdoor furniture to toys, gifts, and whatever else you can imagine. And, we'd like to know about any better methods you've developed for mastering common woodworking tasks such as preparing stock, cutting joints, assembling cabinets, applying finish, and so on.

Kicking off this new series of reader projects is the bread-dipping tray *above* and on *page 66*, a design we purchased from Ralph Bagnall of Murfreesboro, Tennessee. (See more of Ralph's work at www.consultingwoodworker.com.) We found his project concept attractive, functional, novel, and easy to make—just what we're looking for. Thanks, Ralph! In the coming months, we plan to run more reader-supplied projects and woodworking techniques. So send your project and technique ideas (include a brief summary and as many photos or illustrations as you see fit), via e-mail to bill.krier@meredith.com, or through the USPS to:

WOOD Magazine, Reader Project & Technique Ideas, 1716 Locust St., LS-221, Des Moines, IA 50309.

I can't wait to hear from you. Something tells me I'm going to be impressed!

Bill Krier



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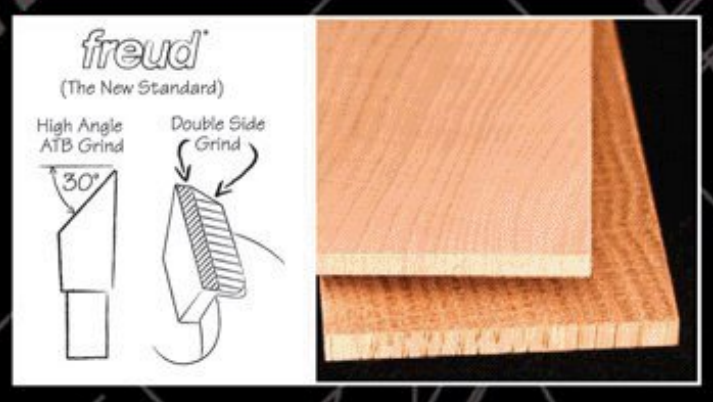
Freud's Fusion Tooth Design vs. Others



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Sounding Board

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Readers create pieces to match *WOOD*® magazine projects

Bench adds seating for bedroom set

I loved the cherry-and-maple bedroom set in issues 135–138 (September to December, 2001), and built the sleigh bed, dresser with mirror, and nightstand for my home. (Unfortunately, I didn't have room for the armoire.)

I wanted a bench to match the set, so I built one based on the design and joinery of the nightstand. My bench measures 18×36×18". I had an upholsterer install the cushioned seat.

—Keith Alberico, Round Lake Beach, Ill.

(Buy downloadable plans for the bedroom suite at woodmagazine.com/sleighbedset.)

"Woven" table complements oak rocker

After building the rocking chair in issue 183 (May 2008), I wanted a side table to go with it. So I designed one taking elements from the rocker's design, with round tenons on the rails and stretchers and tabletop slats that mimic the chair's seat slats. It's 17½" square and 16" tall. To get the woven look in the tabletop, I joined each piece with alternating half-laps.

—John Graham, Leesburg, Fla.

(Buy downloadable plans for the rocking chair at woodmagazine.com/classicrocker.)

Article updates

Issue 194 (November 2009)

The full-size pattern for the Traditional American Blanket Chest base on page 48, should be 4" tall rather than 3¾". To use this pattern, align the bottom edge with the bottom of parts C and D, and cut to size as specified in the article on page 30.

Issue 197 (May 2010)

In "Add Storage to Tool Stands" on page 24, there is an error in Section 2 of customizing your own stand. For Step B, the difference in our example should be 1¼". As a result, the new length in Step D would be 11¾".

2 Do the math (but just a little)

Step A
If your stand measures 13" for dimension Ⓑ, calculate the difference from our stand (13" – 11¾" = 1¼").

Step B
If your stand measures 8" for dimension Ⓒ, calculate the difference (9¼" – 8" = 1¼").

Part	SAMPLE STAND T	W	L	DIFFERENCE FOR YOUR STAND W±	L ±	PART SIZE FOR YOUR STAND W (new)	L (new)	Matl.	Qty.
Upper cabinet									
A sides	¾"	~~10¾"~~	~~13"~~	Ⓑ +1¼"	Ⓒ −1¼"	12"	11¾"	BB	2

Step C
Cross out the original dimension.

Step D
Add or subtract the difference between part sizes and write in the new part dimensions.

Please work safely

In order to show you precise details in photos, we frequently remove safety guards. In your work, be sure to use all safety devices, as well as wearing vision, breathing, and hearing protection.

—WOOD *magazine editors*

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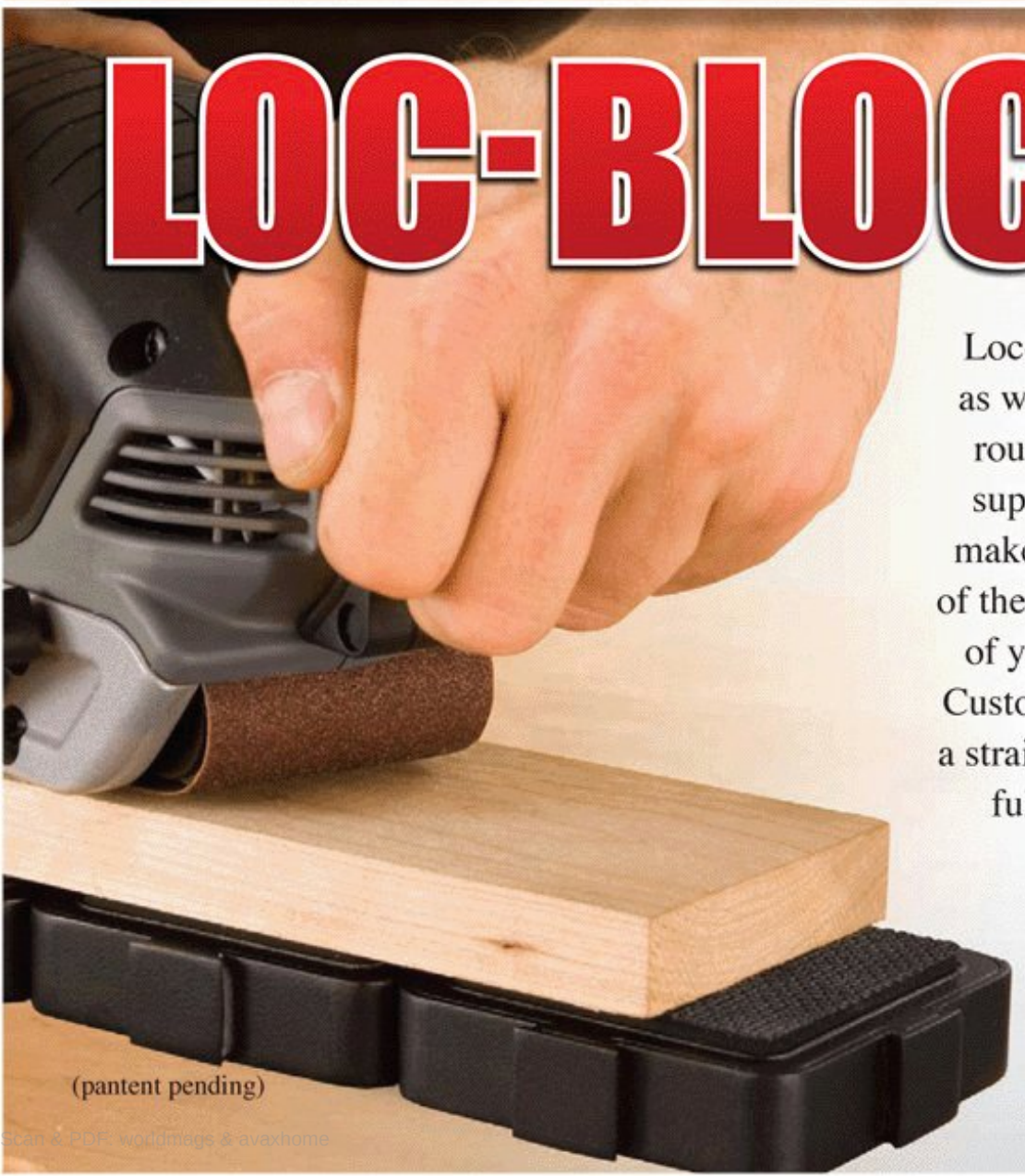

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Shop Tips

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Top Shop Tip

Poor man's panel saw

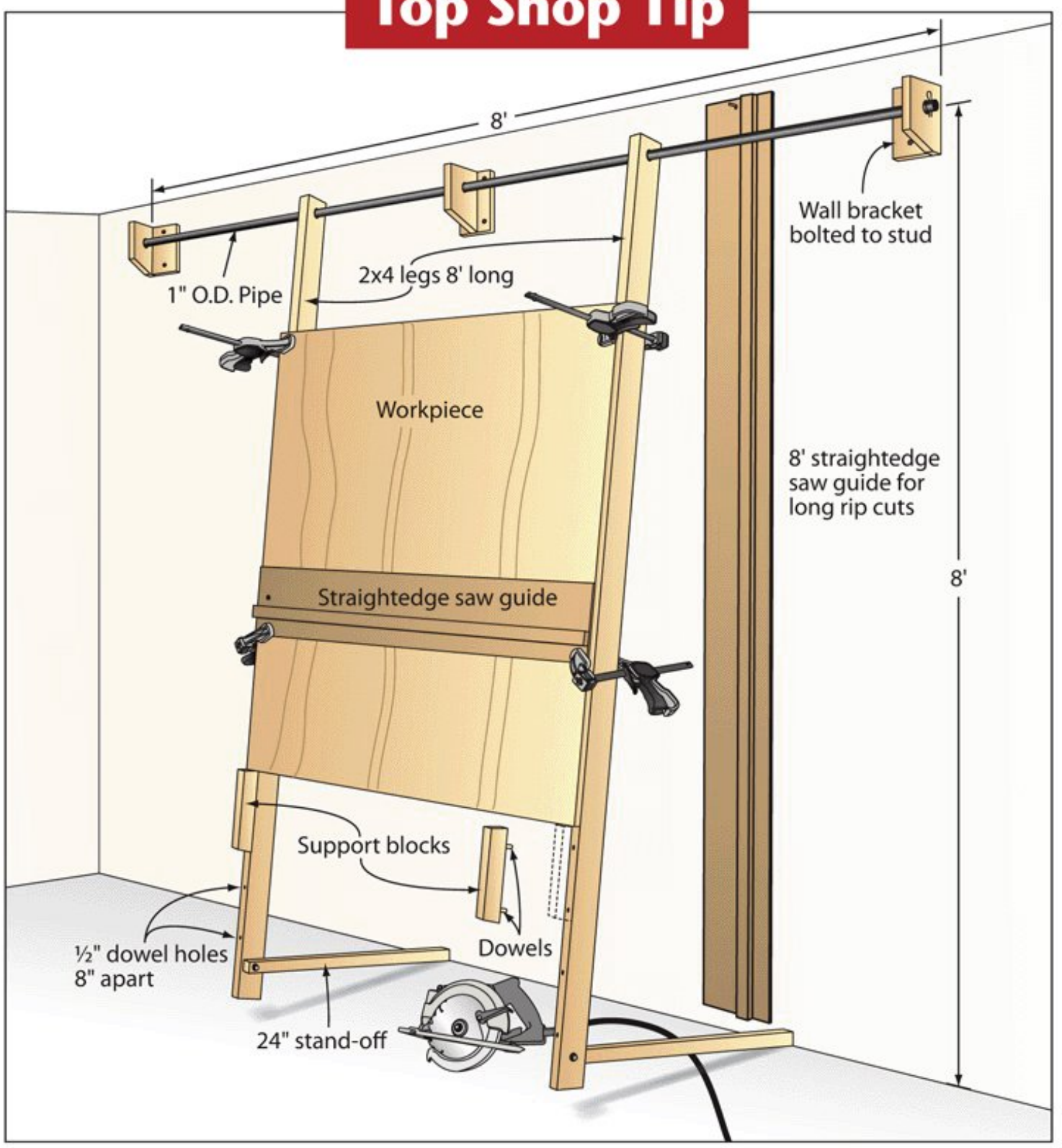
Despite my small shop, I like to make large projects (such as the cedar-strip canoe shown with me). So to maximize my shop space, I built this inexpensive, makeshift panel saw for breaking down sheet goods to rough size.

First, I bolted 2' foldaway stand-offs to the bottoms of 8'-long 2×4 legs, as shown in the drawing. The bottom of the legs have ½" holes drilled every 8" to hold the removable, doweled support blocks, as shown. At the tops of the legs, and in three wall brackets lag-bolted to the wall studs, I drilled 1¼" holes to accommodate a 1" diameter 8'-long iron pipe. After drilling the ends of the pipe for cotter pins, I slid the pipe through the brackets and legs and secured it with the cotter pins.

To use it, I spread the legs to support the outside edges of the workpiece. For crosscuts in full sheets, I stand the sheet on the floor and clamp it to the legs above the cutline to prevent binding. For partial sheets or for rip cuts, I rest the sheet on the support blocks, which I position at a comfortable height before clamping the sheet to the legs.

To position the saw guide, I fasten a clamp about 9" below the cutline on one side and rest the end of my shop-made straightedge saw guide on the clamp while I position and clamp the other end for the cut. Then I go back and position the first end of the guide.

—Bill Anders, Gettysburg, Pa.



Editors' note: *For a FREE video showing you how to make a straightedge saw guide for your circular saw go to woodmagazine.com/straightedge*

Photo: Fine Portraiture by Michele

For sending in this issue's Top Shop Tip, Bill receives Kreg's Precision Beaded Face-Frame System.

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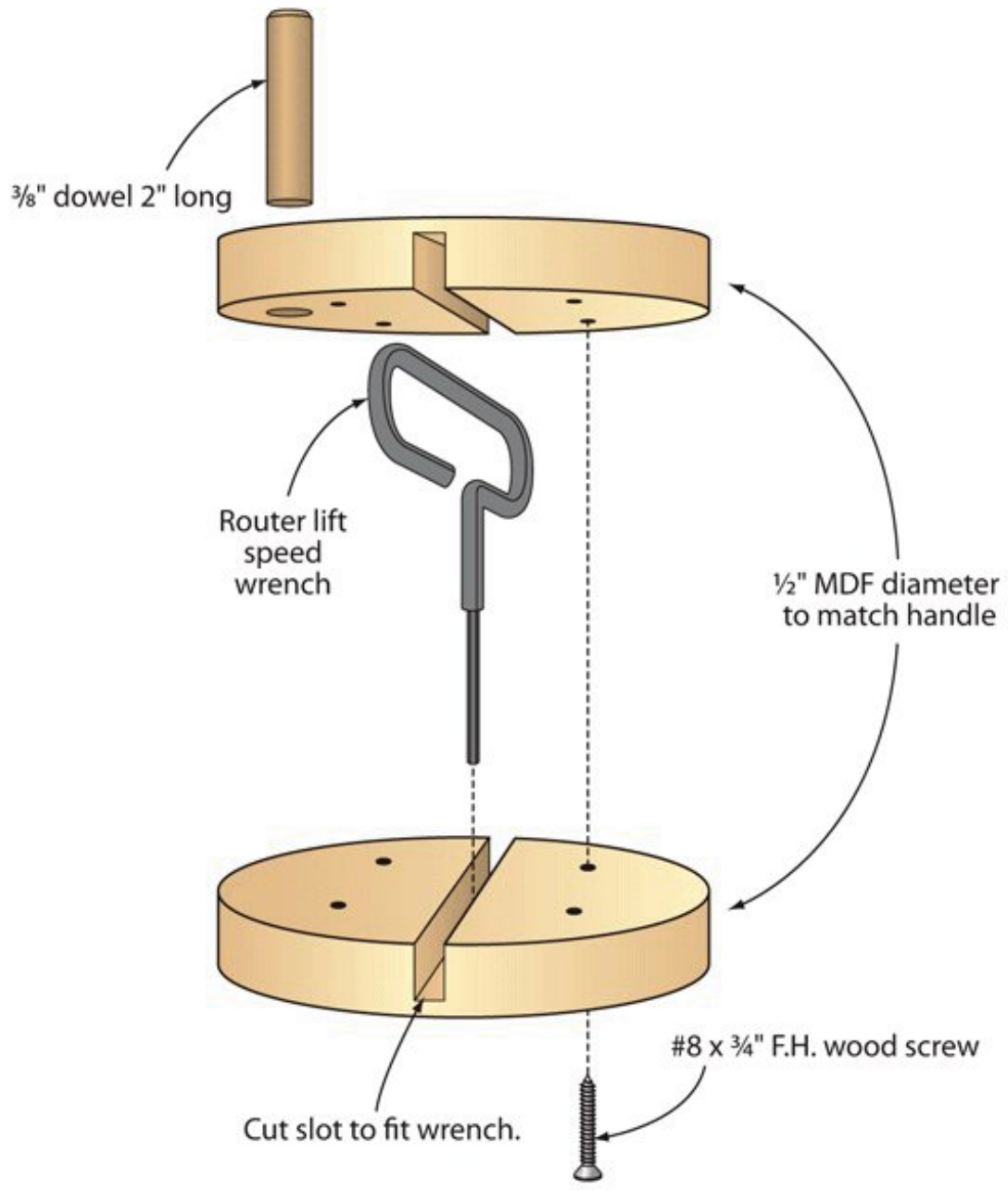
Cranky routers raise without a fuss

In the course of testing the do-it-all routers on *page 56*, I found myself making hundreds of turns of the included router-raising wrenches. Hands cramping, I decided to speed the process by converting the hex-head wrenches to cranks.

To make one for your router, start with two square ½" MDF blanks with sides equal to the handle's length (or, in the case of an L-shaped wrench, double the short leg's length). Cut a centered slot in each of the blanks to snugly fit the wrench handle, and drill a centered hole in the bottom blank for the wrench. Then drill and countersink the bottom blank and secure the two blanks together with screws, as shown. Bandsaw the joined blanks round. Finally, disassemble, drill a ⅜" hole through the top blank to fit a 2"-long dowel, and reassemble with the wrench in place, gluing the dowel into its hole.

—Jan Svec, Des Moines, Iowa



continued on page 12

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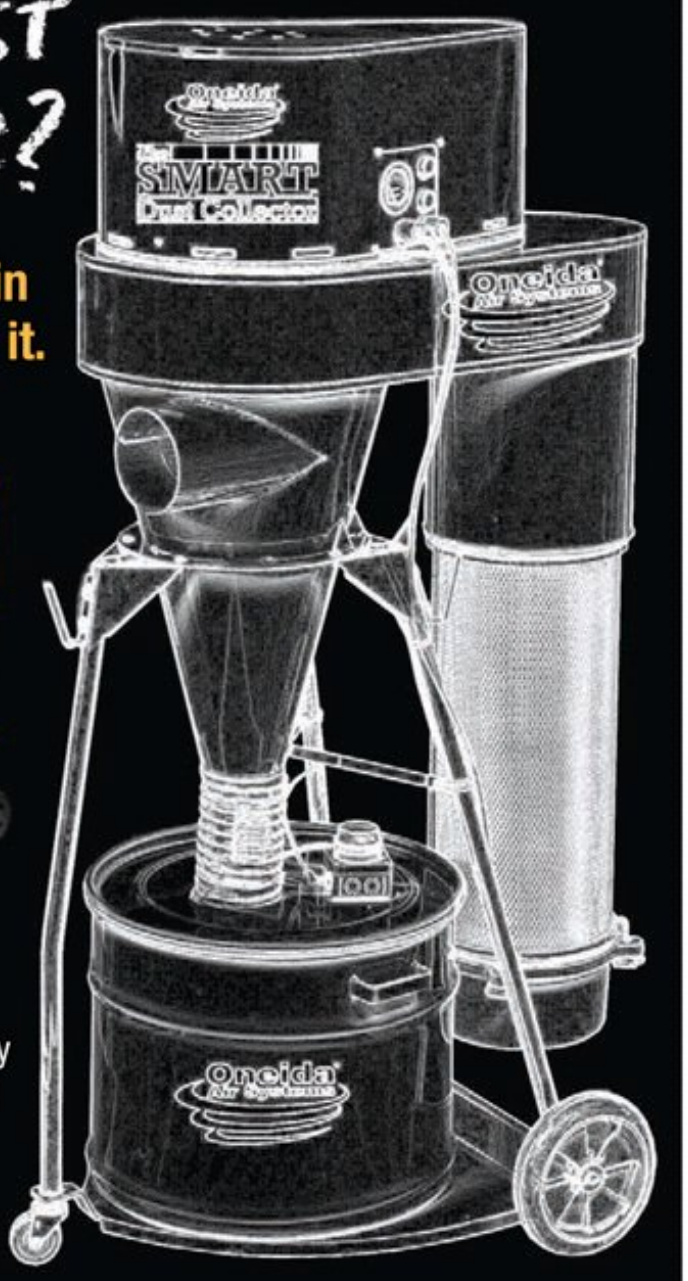

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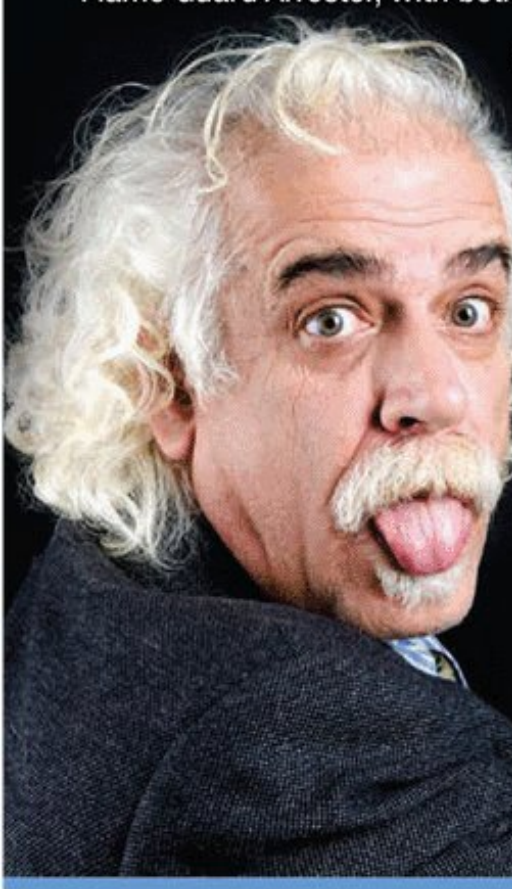

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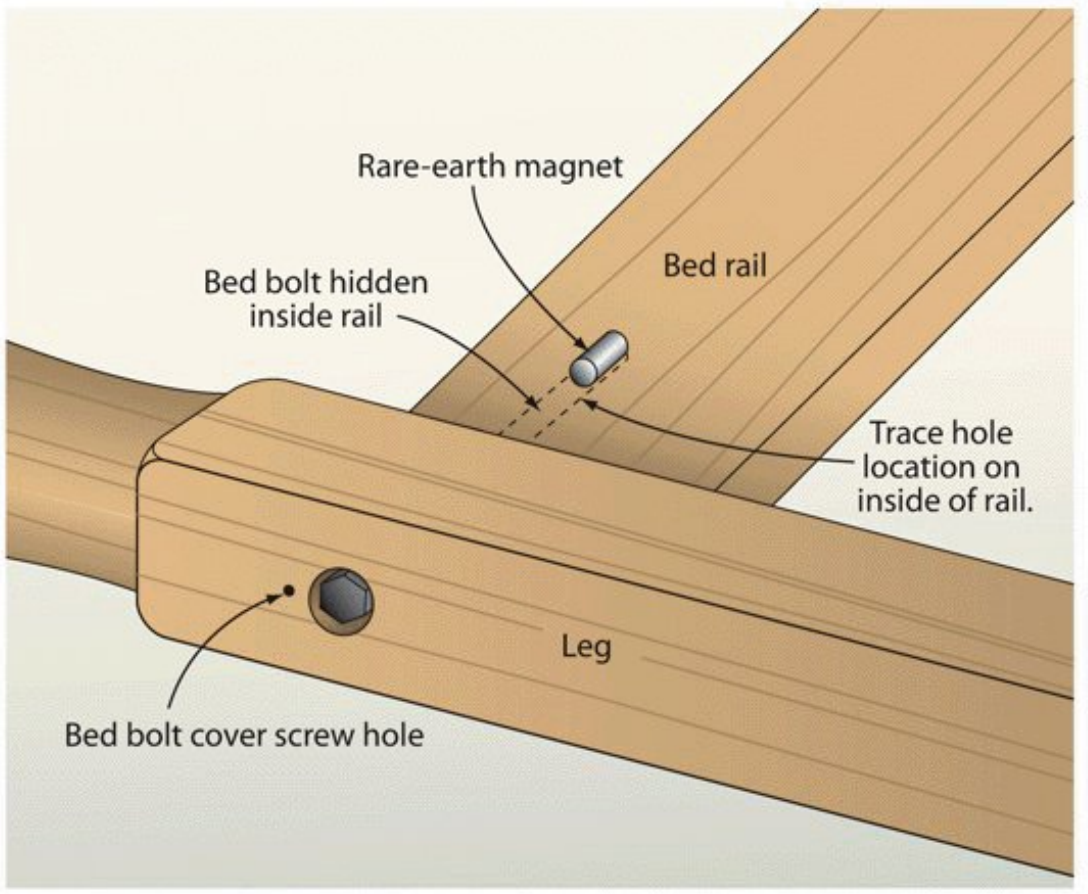
Shop Tips

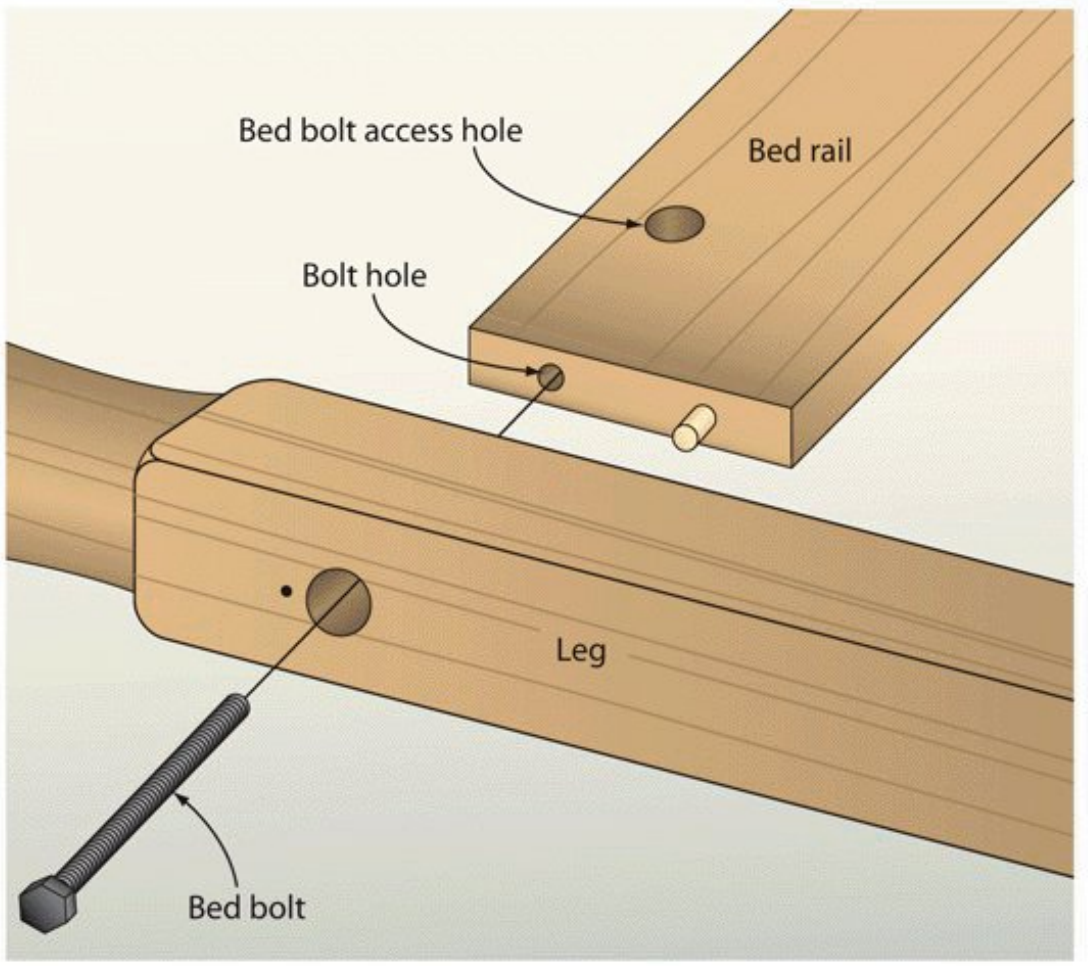
Magnetic attraction opens your eyes to the blind hole

If you've ever built a bed using traditional bed bolts, as shown *below*, you know how difficult it is to blindly match the bolt-access hole to the bolt hole in the rail. Misalign the two holes even slightly, and the nut won't slip over the bolt threads. Here's my method to perfectly mark the center-point of the bolt access hole.

After drilling the bolt hole in the end of the rail (but before boring the access hole), slide the bed bolt into it. Now roll a cylindrical rare-earth magnet, or a stack of flat, round ones, over the inside face of the rail. The magnets will be drawn to the internal bolt and "find" it by coming to a rest directly over the bolt. Mark that location and repeat, moving the magnets farther from the end until they no longer attract. You have located the end of the bolt. Mark a center point there and drill the access hole.

—Mike Schupp, Prairie Village, Kan.

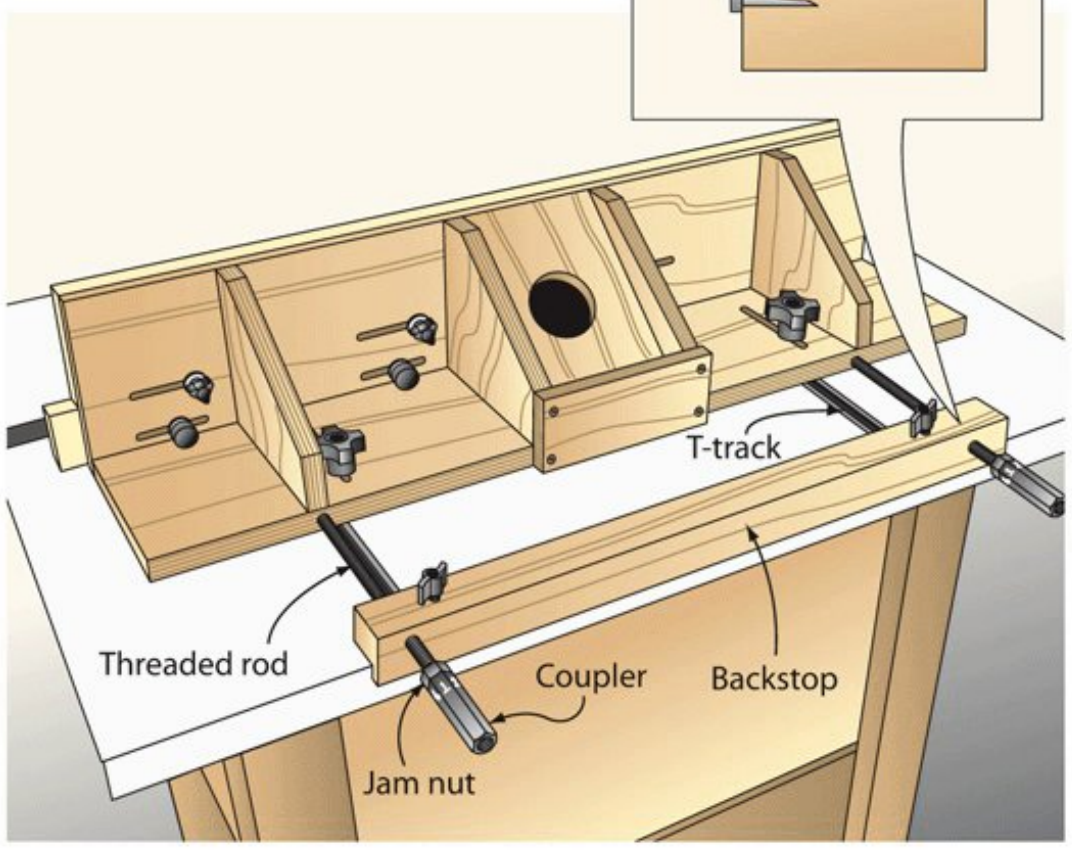




10-minute microadjuster

This simple router table microadjuster takes only minutes to make, and pays huge dividends in accuracy. It consists of a rabbeted backstop that hooks over the rear of the router table and locks into the same T-track that the fence rides in. The backstop houses 6-32 pronged T-nuts in through holes to hold 6-32 threaded rod. I added a jam nut and couplers to act as a handle and a reference to indicate the adjustment amount. Each full turn of the coupler nudges the fence 1/32".

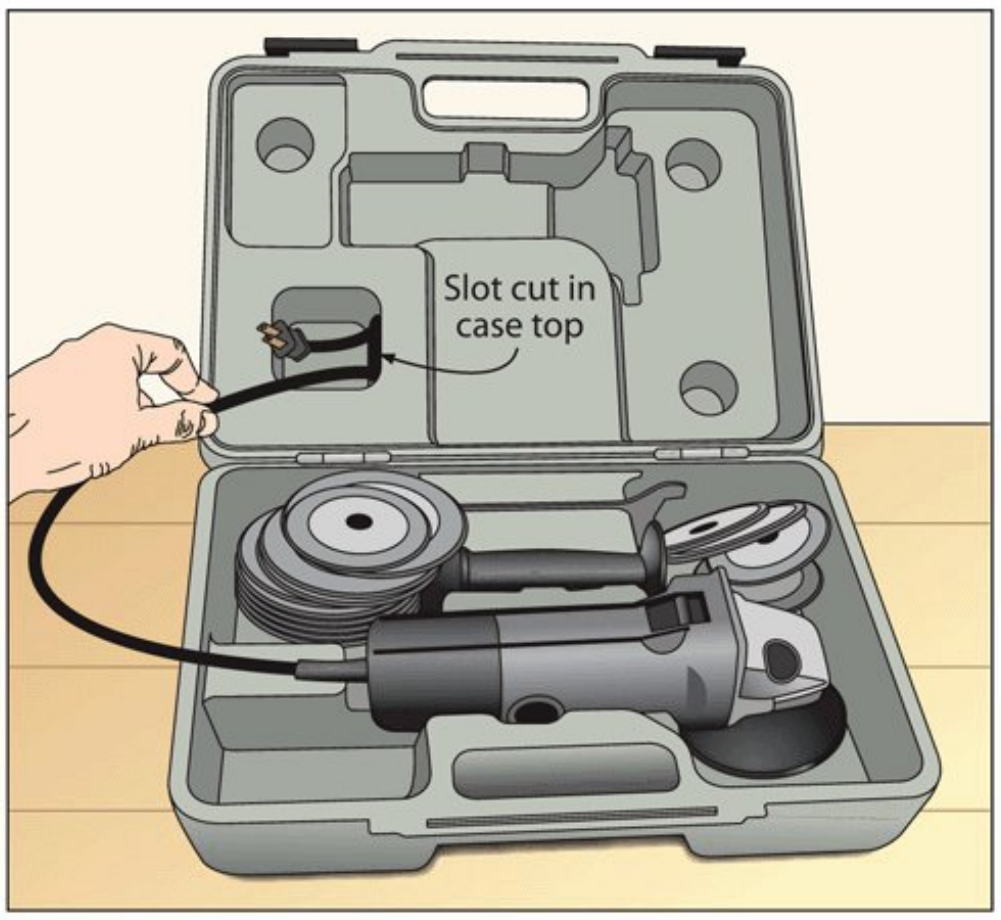
—Richard Lacey, Rome, Pa.



Concealed cord catcher

Those plastic cases that tools come in never seem to fit the tool's cord once it's unfurled for the first time. However, there seems to be ample "filler" space in the molded top. I take advantage of that space by drilling and cutting out a large slot in the top of the case, as shown. The cord stores easily inside and stays contained while I close the case.

—Dave Jenkins, Cuba, N.M.



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Make Super-Strong, Great-Looking

Through Mortises & Tenons

Call it a nod to woodworking history. Call it a skill stretcher. Hey, call it showing off if you want to. Cutting through-mortise-and-tenon joints and pegging them with dowels gives your project a distinction you don't get with time-saving screws and biscuits. As its name implies, this joint features a tenon that goes through the mortised workpiece, with the end of the tenon protruding slightly.

If you're up for the challenge of making this joint, try it as an alternative to the biscuits in the Hall Bench project on *page 28*. Here's how.

Joint-sizing pointers

Through-mortise-and-tenon joints typically go together one of the two ways shown at *right*. Either both parts are the same thickness—a ¾" rail mating a ¾" stile, for example—or the tenon fits into a mortised part of greater thickness, such as a ¾"-thick table apron against a 1½" square leg.

To join parts of equal thickness, cut both the mortises and tenons one-third the part thickness. On a joint using ¾"-thick parts, for example, the mortise width and tenon thickness both measure ¼".

Quick Tip! Allow some wiggle room. If your smallest chisel measures ¼" wide, lay out mortises a hair wider than that to simplify chiseling out waste later.

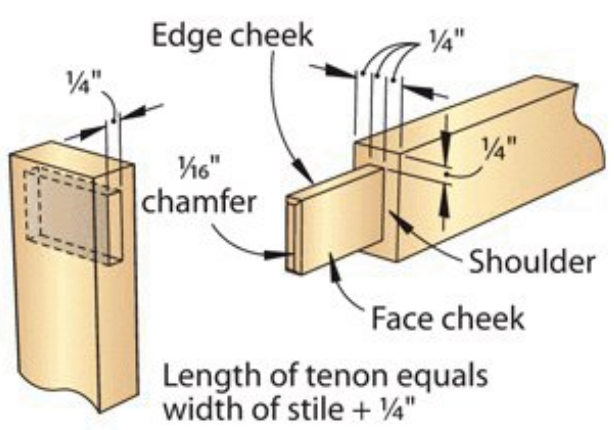
For parts of unequal thickness, make the mortise and tenon up to a third the thickness of the larger part. To join a ¾"-thick table apron a 1½"-thick leg, for example, cut tenons ⅜"–½" thick on the apron ends.

Make the tenon 1/32" longer than the width of the mating part if you'll sand the tenon end flush with the mortised part after assembly. For beveled-end tenons, like the one shown *above*, make

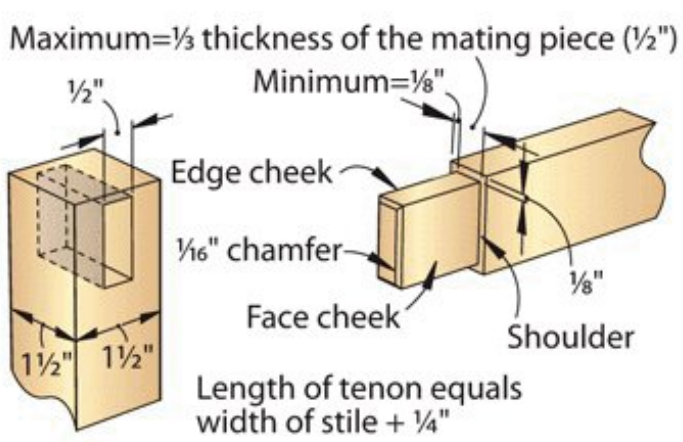
continued on page 16

SIZE MORTISES AND TENONS TO SUIT YOUR WORKPIECE THICKNESSES

Joining parts of equal thickness (¾")



Joining parts of unequal thickness



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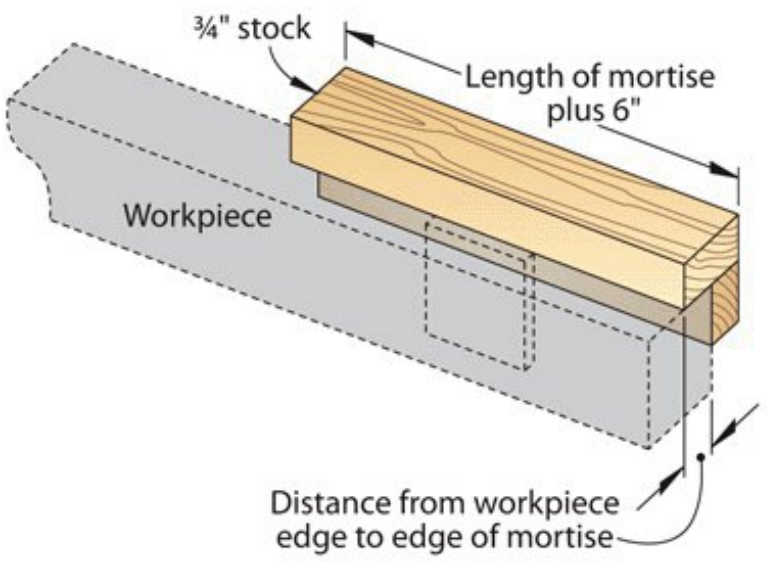
DRILL OUT MORTISE WASTE

Overlapping holes drilled with a brad-point bit should leave evenly spaced scallops and rounded corners.

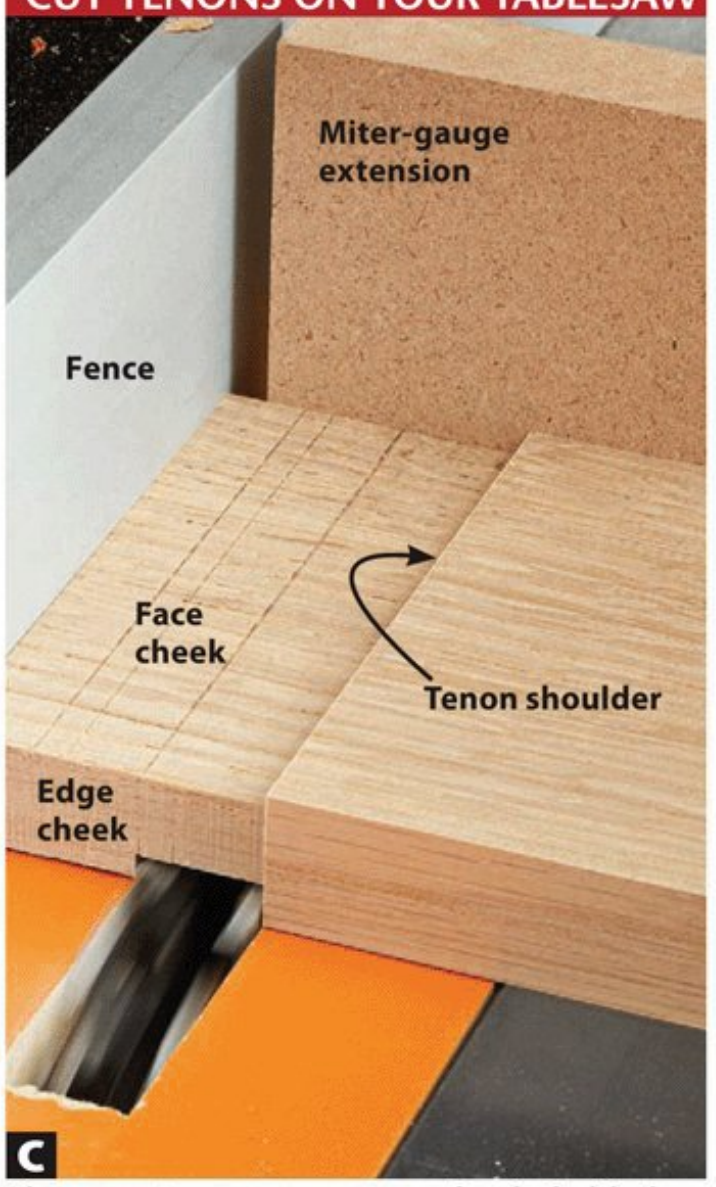
A WIDE CHISEL HELPS YOU SMOOTH THE MORTISE WALLS

Glue a guide cleat to your chisel guide so the guide edge aligns with the marked mortise edge. The guide holds the chisel 90° to the workpiece and prevents cutting outside the layout lines.

CHISEL GUIDE



CUT TENONS ON YOUR TABLESAW



Plan your tenon passes over the dado blade to avoid leaving a score line where you'll later bevel the end of the tenon.

FINE-TUNE THE TENON FIT

To fine-tune a tenon with a rabbet block plane, shave away equal amounts on both faces. Check the fit after every two passes.

the tenons ¼" longer than the mating part width.

Begin with the mortises

Tenons can be fine-tuned easier than mortise widths, so cut your mortises first and match the tenons to them. First lay out a mortise on two opposite faces of the workpiece and check that they're equal distances from one end. On your drill press, mount a bit about 1/16" smaller than the mortise width and attach a fence to the drill-press table. Clamp the workpiece to the fence and drill through the workpiece along the length of the mortise [**Photo A**].

To clean up the mortise, first use a narrow chisel to square the ends. Then assemble a chisel guide as shown *above*. Slide the flat face of a chisel that's 1" or wider down the edge of the guide and just deeper than halfway through the mortise to smooth the scallops left from drilling [**Photo B**]. Switch the guide to the opposite side and clean up that mortise wall, then flip the workpiece and do the same from the opposite side.

Cut tenons to fit

Install a dado blade as wide as your tablesaw accepts and set the height to leave tenons slightly thicker than your mortise widths. Test the settings on scrap the thickness of your tenon parts.

Set the rip fence a distance from the blade equal to the tenon length and mount an extension on the miter gauge. Cut tenon passes with minimal overlap to reduce scoring on the face cheeks [**Photo C**]. Then turn the workpiece on edge to cut the edge cheeks.

To fine-tune the tenon, remove material from each face cheek equally using a scrap block with 100-grit abrasive on one face (not the edges) or a rabbet block plane [**Photo D**]. Stop when the tenon slides through the mortise with only hand pressure.

Insert the tenon through the mortise and lightly scribe a line around the

continued on page 18

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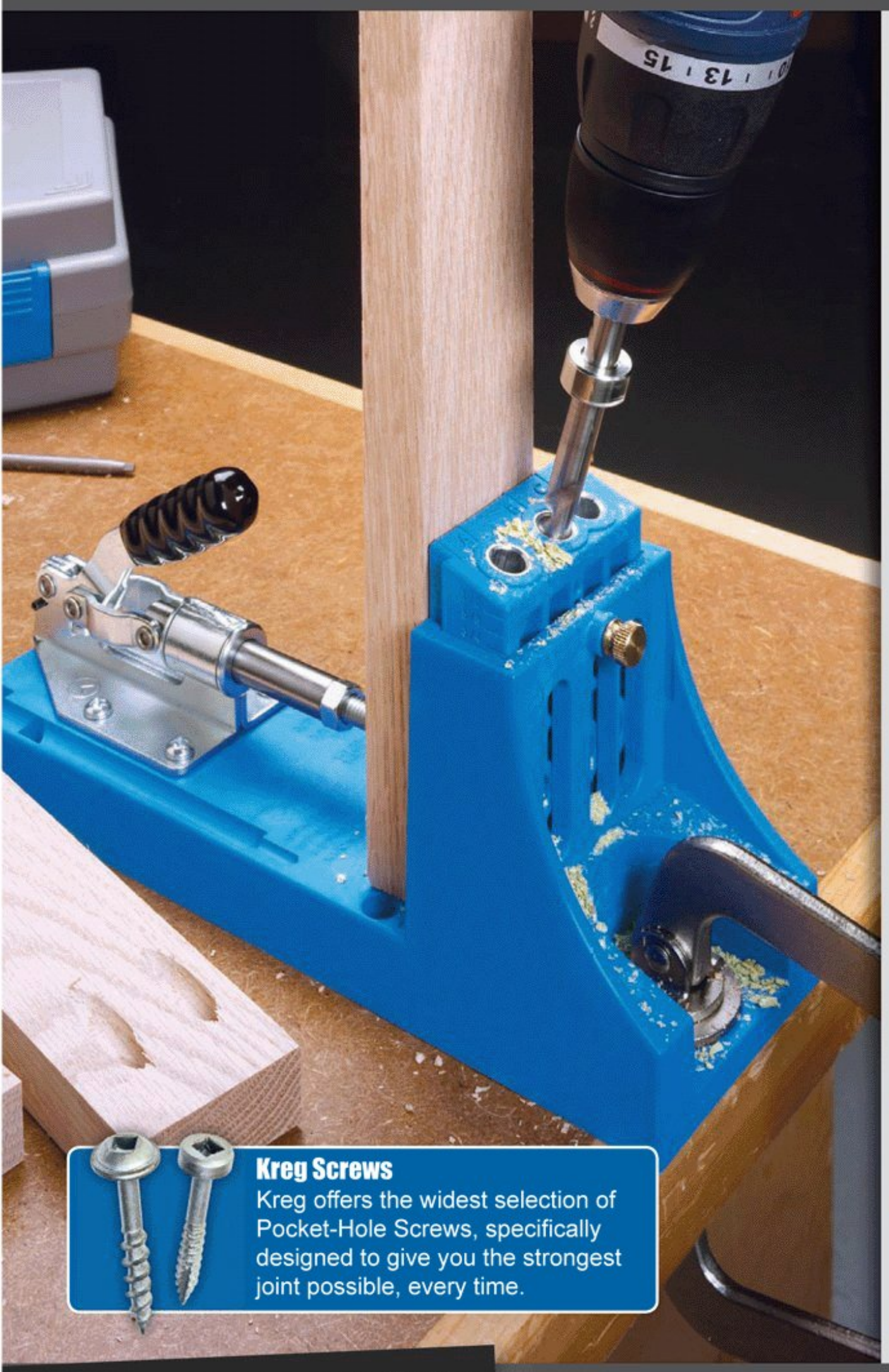

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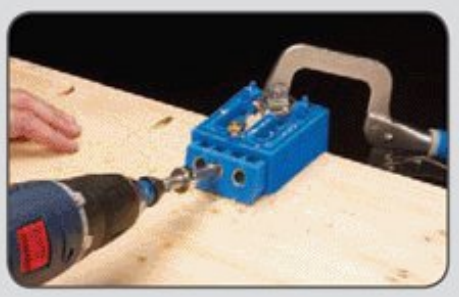

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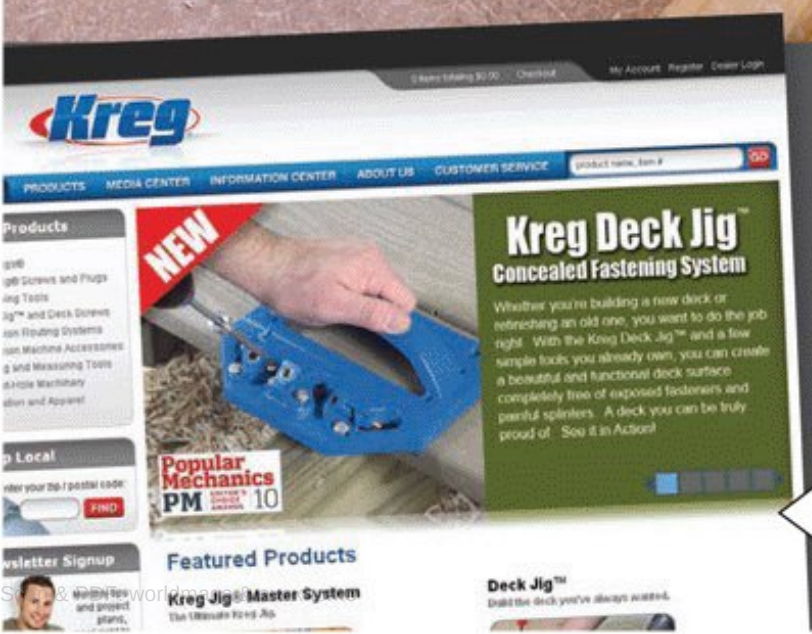

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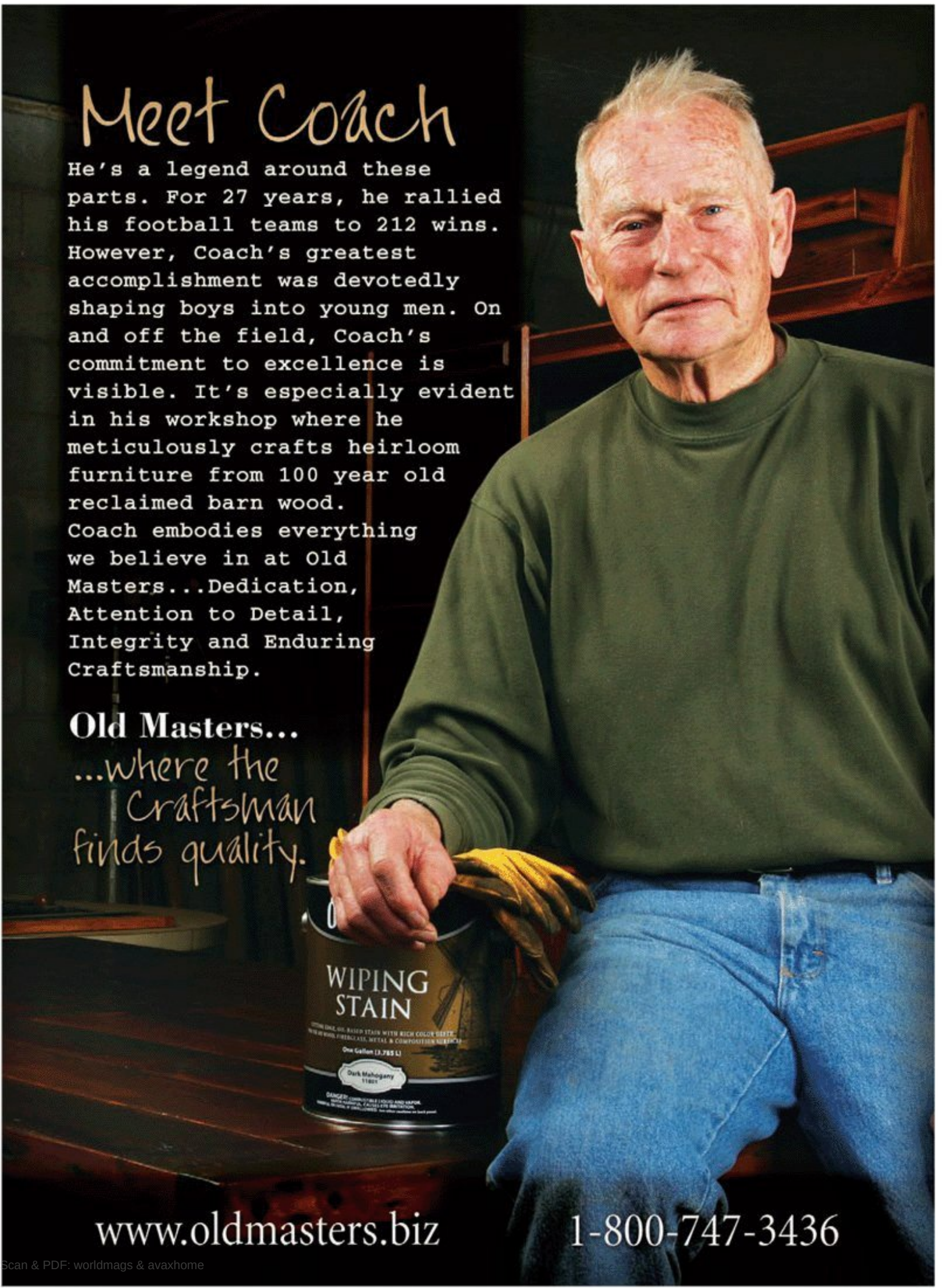
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exposed end of the tenon [**Photo E**]. Separate the joint parts, and sand or plane a 45° bevel on each tenon face and edge until it reaches the scribed line [**Photo F**].

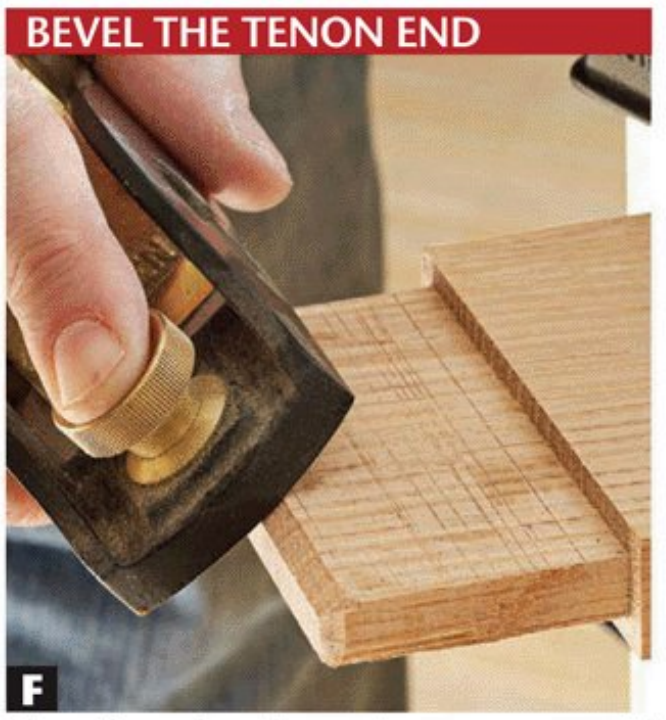
To assemble the joint without smearing glue on the exposed tenon, lightly glue the center of the face cheek, insert the tenon, and clamp until dry. To mechanically reinforce the joint, drill ¼" holes 1" in from the mortise ends and deep enough to pass through the tenon. You can also drill through both faces of the mortised part if you take care to avoid blow-out when driving dowels through.

Bevel the ends of two ¼" dowels and drive them into the holes, as shown at the top of *page 14*. Cut the dowels flush and sand the surface smooth up to 180 grit using a firm sanding block.

MARK THE TENON FOR BEVELS

A marking knife with a single bevel helps you score around the tenon flush with the surface of the mortise.

BEVEL THE TENON END



Plane from the edge to the center to avoid tear-out when beveling tenons. Then sand the bevels and end to 180 grit.

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A stopblock on your miter-gauge extension provides a simple, foolproof way to crosscut multiple parts to equal length without measuring each one. But what if you're cutting extra-long parts, such as table legs? In that case, clamp on a long-part stopblock like this one.

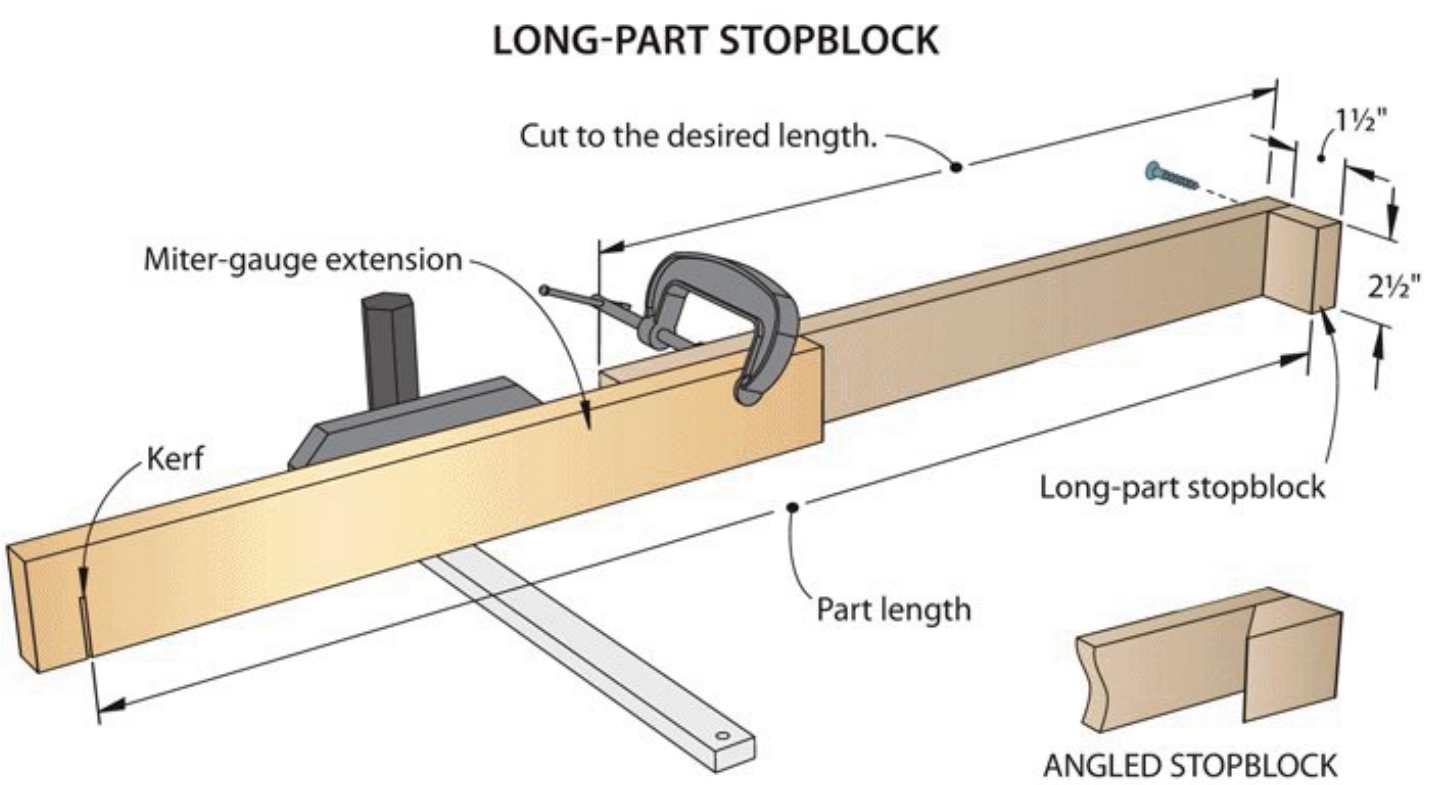
Start by attaching an MDF or plywood miter-gauge extension to your miter gauge. Make it at least 1" wider than the thickness of your workpieces and long enough to reach from just past the blade on one end to 6" or so past the end of the miter gauge on the other end. Mount it to your saw's stock miter gauge, and cut a kerf that marks the blade position.

Subtract the length of the extension from the final length of the workpiece, and cut a strip of ¾"-thick MDF or plywood about 10" longer than that distance. Next crosscut a 1½"-long piece off the strip and screw it to one end of the strip, where shown at *right*.

To use the stopblock, measure the length of the parts you'll cut and clamp it that distance from the kerf. Butt the workpiece end against the stopblock (without bending the extension) and crosscut the part.

If the stopblock slips or wobbles, add a second clamp or adhere 100-grit sandpaper to the back side of the miter-gauge extension where it overlaps the long-part stopblock.

To cut parts with mitered ends, replace the stopblock with one that's mitered the same angle as your part. Completely capturing the mitered workpiece end adds dead-on repeatability to those cuts. Always check to make sure there's no sawdust between your workpiece and the stopblock.



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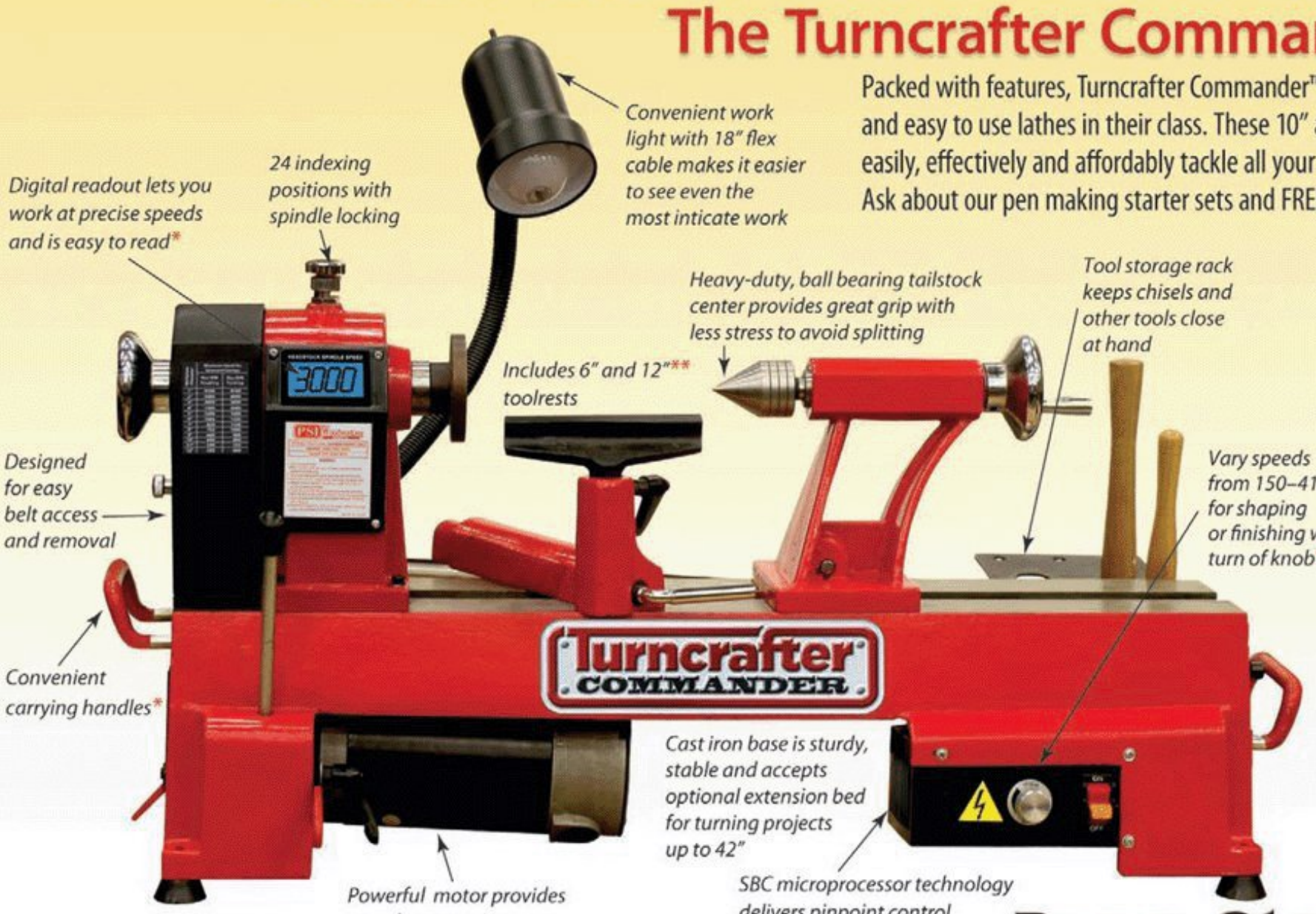
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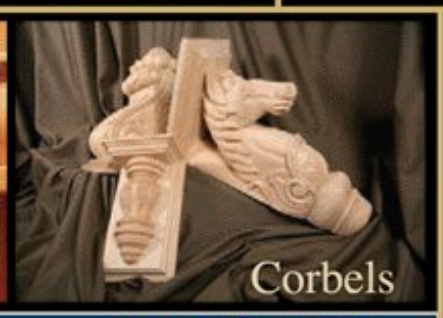

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The Shop Monkey

Don't be afraid... he's trained.

Practice Makes Proficient

Wanna become a star third baseman for a Major League Baseball team? It's easy. Go buy a baseball glove and show up at the stadium. How about a talented heart surgeon? Piece of cake. Buy the board game *Operation* and sign on at the Mayo Clinic.

Is this how you make it in the real world? Of course not. In the real world, success comes only after developing your skills through hard work, practice, and study. Why, then, do so few woodworkers see the value of practice? Or do you "practice by building" projects?

Think about it. Say you have a project that begs for dovetails. The last time you cut a set—by hand or machine—was a little more than a year ago. Even if you're sure the chisels are honed or the jig is properly set up, would you have the confidence to put the blade or bit to a stack of gorgeously figured maple, quartersawn white oak, or flawless mahogany boards?

Some woodworkers do; others don't. Some succeed; others realize that something was not quite right only after gaps, chip-out, or complete miscuts turn those precious timbers into scrapwood. It's not carelessness or a lack of skill. More often than not, woodworkers who fail simply need to be more comfortable with the task.

That's why I advocate practicing your woodworking skills, even if for only a few minutes a day. With just a few plain, low-cost boards of poplar, pine, or whatever is cheap and plentiful, you can vastly improve the quality of your work.

In my shop, I'll frequently clamp a poplar board in the vise and cut a row of straight lines with a dovetail saw. I'm not building anything, just trying to get the feel for the saw cutting, focusing on my arm movement to ensure the saw follows the layout line. The first five or ten minutes of shop time go toward warm up, and then I spend another ten or fifteen minutes at the end of a shop session readying boards for the next practice round.

It may seem boring and repetitive at first (and my wife sometimes looks askance at this "unproductive exercise") but once I get the feel of things, the practice helps sharpen my concentration, develops muscle memory, and puts me in the right frame of mind to work in the shop.

No matter how talented they are, good performers always take the time to practice. Athletes put in training time, even in mid-season, to hone their skills. Musicians tune their instruments and practice chords and progressions every day between concerts. Even professional airline pilots spend time in a simulator to stay sharp and keep their certifications current.

Once you understand this essential need for practice, taking the time to hone your woodworking skills doesn't sound odd at all. In fact, the only things that should be sharper than your chisels are your woodworking skills.

The Shop Monkey (aka Tom Iovino of Tampa, Fla.) blogs prolifically at woodmagazine.com/shopmonkey.

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Tape Dispenser

Clean lines and crisp cuts make this shop helper attractive and functional.

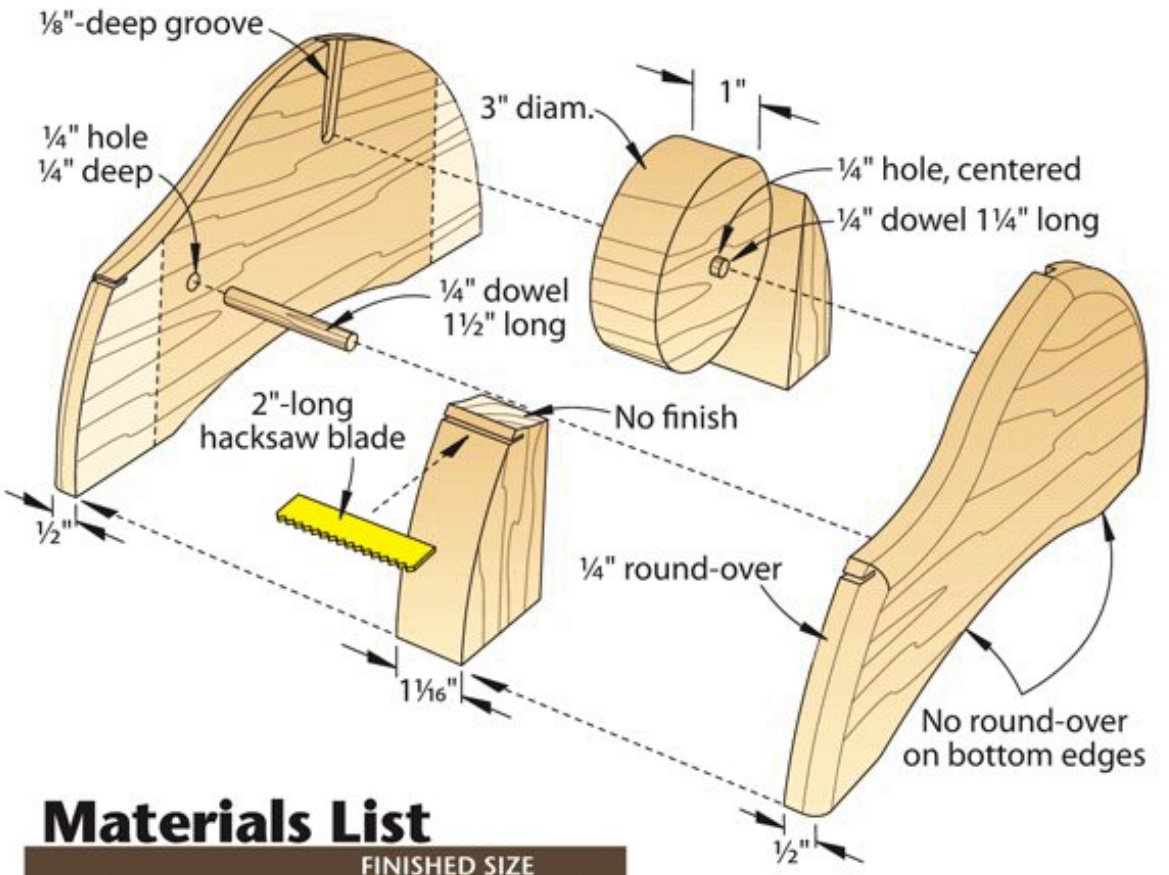
Make quick work of dispensing painter's tape for masking or clamping tasks by converting a few of your shop scraps into this handy accessory. Adhere the full-size pattern on *page 48* to thin hardboard or plywood. Cut the template to shape, including the tapered groove. Drill a 1/16" hole through each marked centerpoint. Cut the two side blanks and the front and rear spacers to the sizes noted on the drawings. Use the template to transfer outline, hole centerpoints, and the tapered groove location to the *inside* face of each side blank. Drill the two holes on the inside face of each side blank where marked. Drilling the 9/32" hole first provides a perfectly round end to the bottom of the tapered groove.

Adhere the rectangular side blanks to your workbench with double-faced tape. Fit your router with a 1/8" straight bit, and freehand rout a 1/8"-deep groove on the inside face of each blank.

Glue and clamp the spacers between the side blanks, where shown on the full-size pattern, keeping the grooves directly across from each other. Later, remove the clamps and trace around the template to transfer the dispenser outline to the outside face of the lamination. Bandsaw and sand the dispenser to shape. Rout a 1/4" round-over along all but the bottom edges.

Mark a 2"-long section on a hacksaw blade. Use a hammer and cold chisel to indent the blade where marked. Bend and break the blade at the indentations. (We held one end in a vise and held the other with pliers.) Cut a kerf in the dispenser for the blade section. The blade should extend 1/8" beyond the front end of the dispenser. Sand the dispenser smooth and use epoxy or instant glue to glue the blade in the kerf.

Mark a 3"-diameter disc on a piece of 1"-thick stock. At the centerpoint used to mark the circle, drill a 1/4" hole. Bandsaw and disc-sand the disc to fit snugly inside a roll of tape. Cut a piece of 1/4" dowel 1 1/4" long and glue and center it inside the disc. Apply a finish, avoiding the section directly behind the blade. Tape will stick better if left unfinished.



Materials List

Part	FINISHED SIZE T	W	L	Qty.
side blanks	1/2"	4 1/4"	10 1/4"	2
front spacer	1 1/16"	1 3/4"	3 1/2"	1
rear spacer	1 1/16"	1 1/2"	4"	1
tape disc	1"	3" diam.		1

Project design:
Matt Seiler

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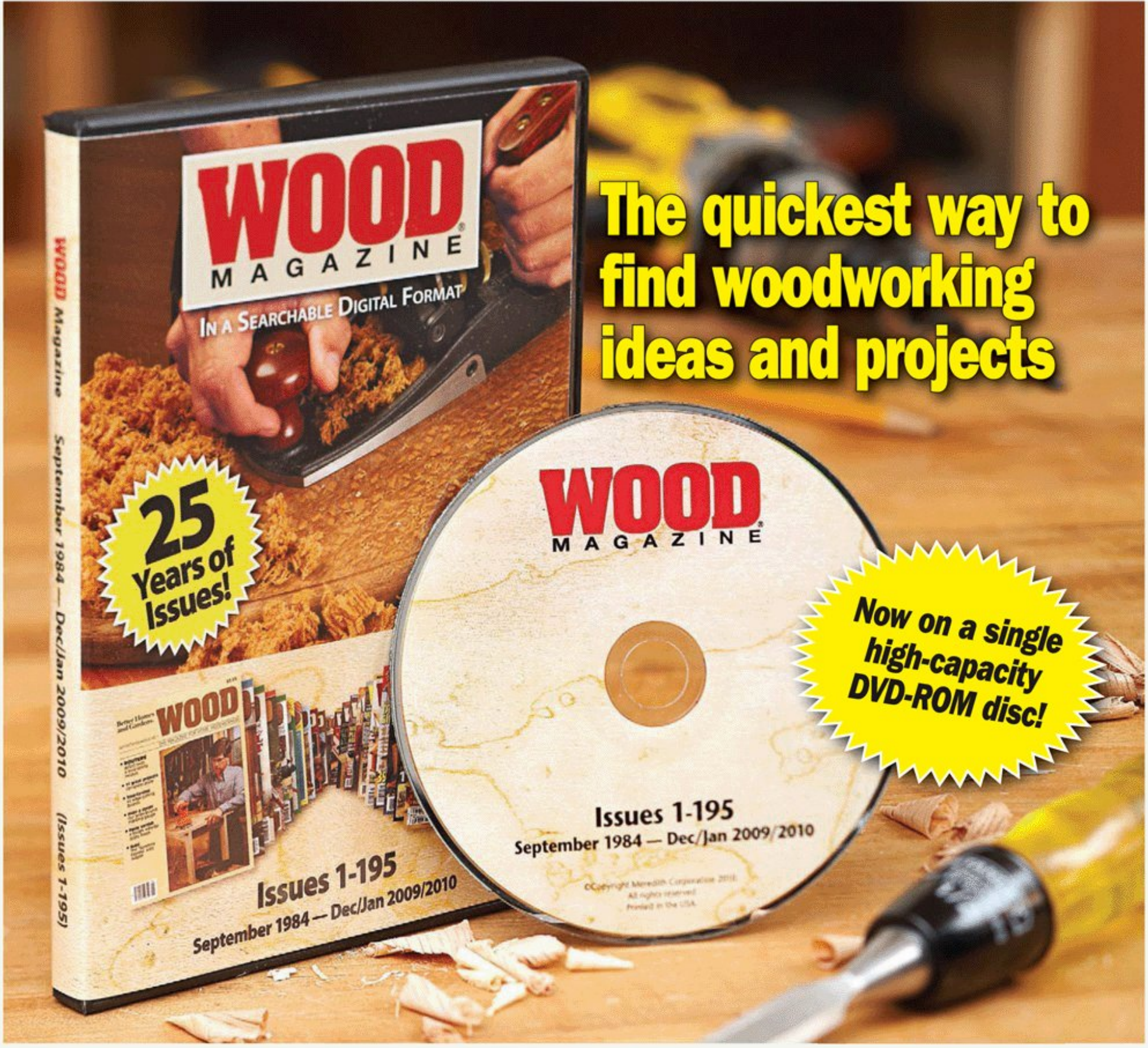
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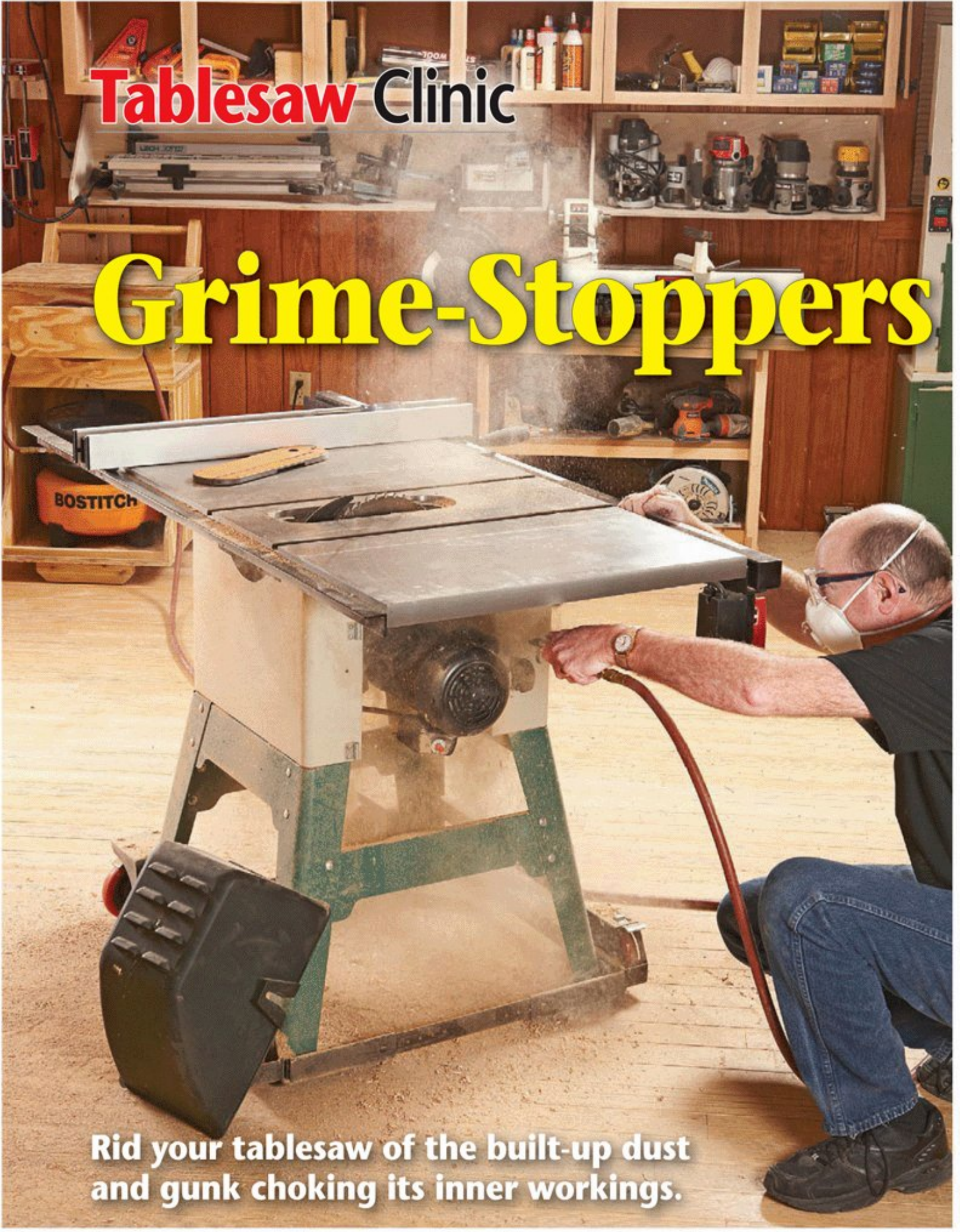


Rid your tablesaw of the built-up dust and gunk choking its inner workings.

It's ironic: Tablesaws create dust with every cut, but that same debris can restrict the saw's ability to tilt, elevate, and make more cuts. Even with effective dust collection in place, gunk tends to build up on the gears, trunnions, bearings, and motor. Here's how you can beat the dust gremlins.

Make a clean sweep

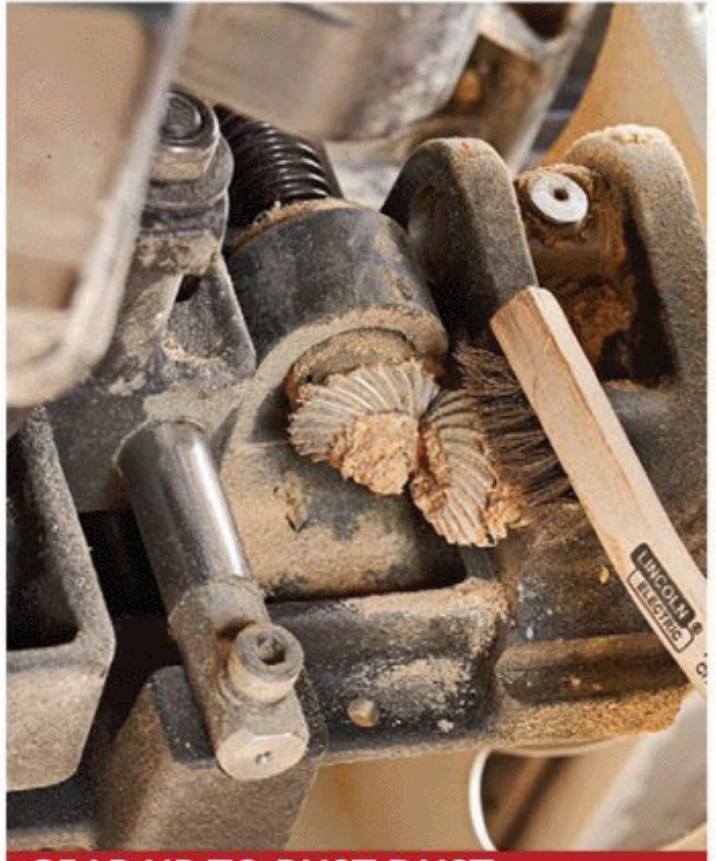
Begin your cleanup by sucking out as much debris as possible from inside the saw cabinet with a shop vacuum, preferably with a narrow nozzle. Be sure to wear eye and breathing protection. Next, close the access door and remove the blade from the arbor. With your dust collector running, blow compressed air into the throat opening to clear as much dust as possible, directing it toward the dust port.

After you've blown off all the dust you can through the blade throat, open or remove all the access doors and panels. Now blow out as much dust as possible by shooting compressed air through all the openings. You'll likely have to do this several times from above and below to completely evacuate the dust.

Next, use a steel or brass wire brush (*top right*) to dislodge grime from your saw's gears, threaded rods, trunnions, and bevel stops. For tough grease-and-gunk deposits, dip the brush in mineral spirits and scrub. Just keep any such solvents well away from bearings to avoid damaging them.

Apply lube—but do it right

Once you've blown and brushed clean all the internal components, lubricating them with more grease will only attract gunk-building dust again. Instead, coat them (*above photo*) with a penetrating, self-drying lubricant such as ProGold's PG2000. (See **Source** *below.*) This product soaks into the pores of the steel and cast iron to provide the much-needed lubrication without attracting dust. Squirt some onto the cleaned parts, and then turn the handwheels to spread the lube evenly. Have a rag handy to wipe up any excess lubricant. Wait for the PG2000 to dry before cutting wood again. Make sawdust while it's wet and you'll just create the problem again. You might need two or three applications for best results.



GEAR UP TO BUST DUST

You don't need to remove dust from all the cast-iron elements. Instead, focus on cleaning the moving parts, such as these gears.

LUBE PARTS THOROUGHLY

While spraying the cleaned parts with a lubricant, turn the handwheels through a full range of motion to distribute the coating.

Source

ProGold PG2000: product #147403, 16 oz., $10, Woodcraft Supply, 800-225-1153 or woodcraft.com.

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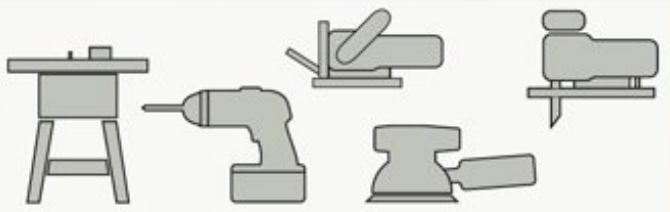

- **Materials:** ½"-, ¾"-, and 1½"-thick quartersawn white oak, a quarter-sheet of ½" plywood.

PROJECT HIGHLIGHTS

- Overall dimensions: 43" long × 20" deep × 27¾" high.
- Learn to cut biscuit slots quickly and accurately.
- Create a wrinkle-free upholstered seat.

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Authentic Arts & Crafts furniture once required advanced joinery skills. But you can assemble this bench using easy-to-make biscuit joints and the source on *page 32* for quarter-sawn white oak.

If you're ready for a bigger challenge, build it with real through-mortise-and-tenon joints. Learn how to master that joint on *page 66*.

Two sides to the story

1 Cut the legs (A) to size from 1½"-thick stock [**Materials List**, *page 32*].

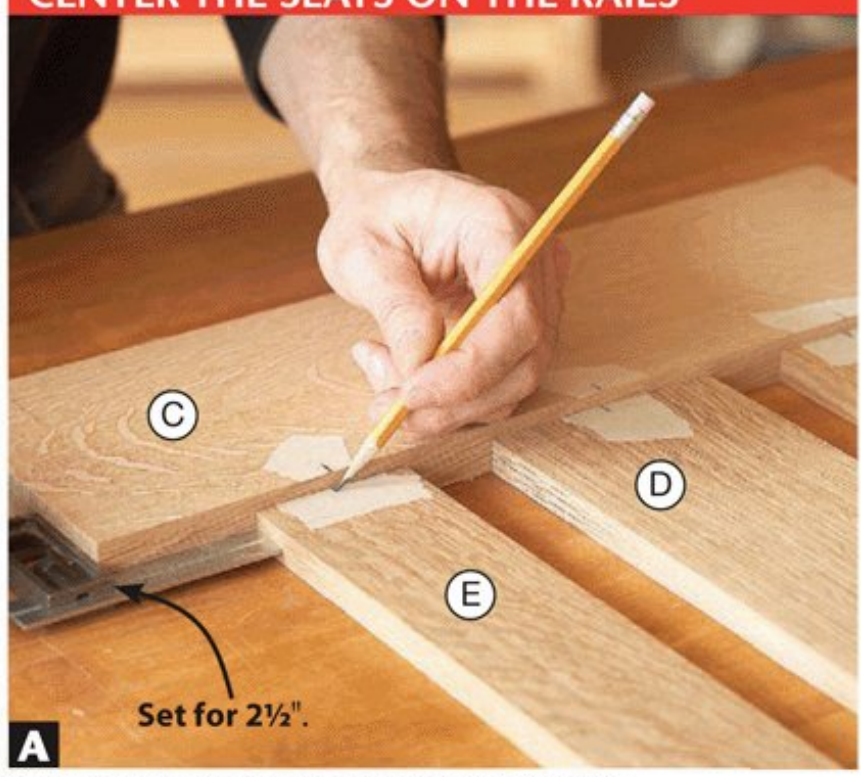
Quick Tip! Glue up your own 1½" stock. Rip ¾"-thick stock at least 4" wide down the center. Glue and clamp one half back-to-back to the other with one edge flush. Later, rip the glue-up to width for 1½"-square leg blanks.

2 Cut the bottom end rails (B) about ½" oversize in width, then the top end rails (C), inside slats (D), and outside slats (E) to size. Sand them to 150 grit.

3 Using masking tape, mark the centers of the inside slat (D) and two outside slats (E). Then transfer those marks to the bottom (B) and top (C) end rails [**Drawing 1**, **Photo A**]. On a flat surface, align the rail and slat marks, and check the slat insets from the rail ends.

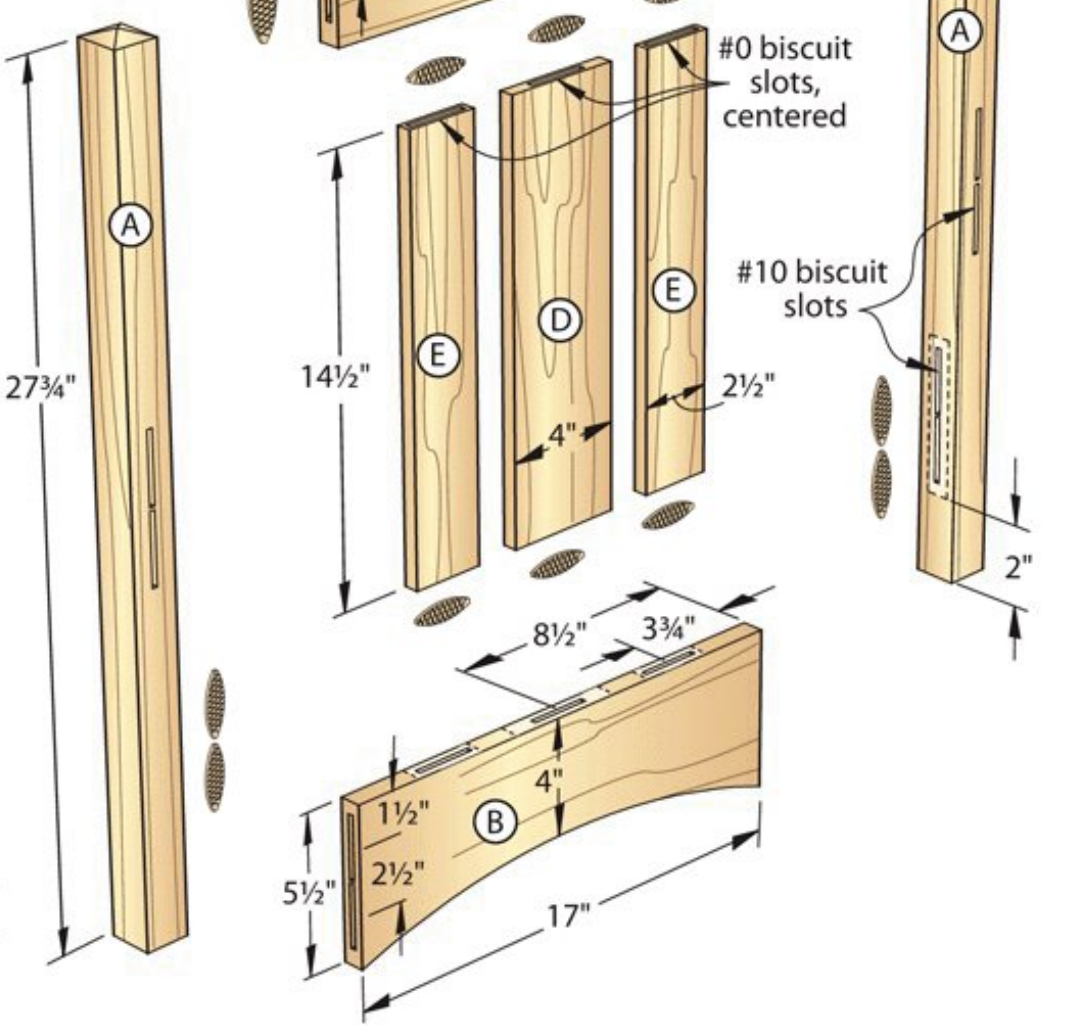
4 Set your biscuit joiner to cut #0 slots centered in ¾"-thick stock. (See the **Shop Tip** *below* for help.) Cut slots where marked on the edges of the bottom (B) and top (C) end rails. Then

CENTER THE SLATS ON THE RAILS



Set a square to check the outside slat (E) offsets from the rail (B, C) ends. Align inner-slat (D) center marks with the rail centers.

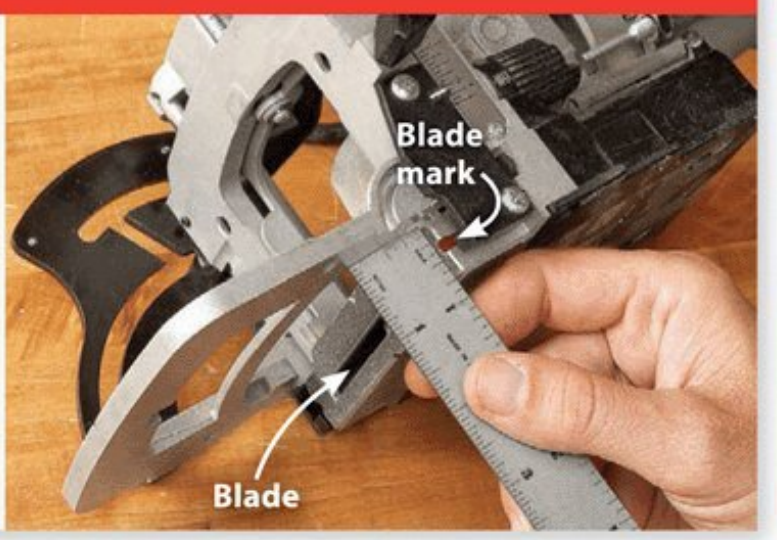
1 BENCH SIDE ASSEMBLY



SHOP TIP

Bull's-eye your biscuits

To accurately center biscuits on the thickness of your workpieces, use a rule instead of the joiner's built-in scale. First unplug the tool. Place your ruler on the biscuit-joiner fence and center the blade mark at half the thickness of the part. For example, center the blade ⅜" from the fence for ¾"-thick parts.



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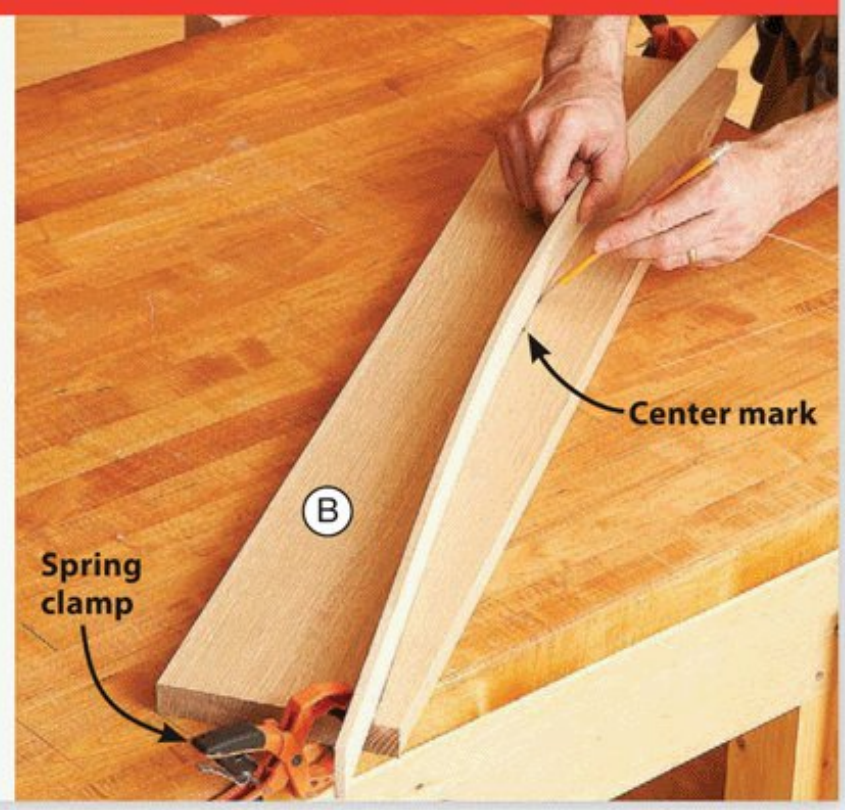
SHOP TIP

Trace an accurate arc

To mark an even curve on the bottom end rails (B) and front and back rails (F), cut a ¼×1" strip of plywood about 6" longer than your part. Attach spring clamps to your workpiece to position the strip flush with the arc start and stop marks at the workpiece ends. Then pull the strip up and against the clamps until it meets the arc center mark on the workpiece. Trace the arc and remove the spring clamps.



cut one #20 biscuit slot on each end of the top rails, and cut two #10 biscuit slots on each end of the bottom end rails [**Drawing 1**]. Now reset the biscuit joiner for ½"-thick stock and cut #0 slots on the ends of the inside slats (D) and outside slats (E).

5 Refer to the **Shop Tip** *above* to lay out the arc on the bottom end rails (B). Jigsaw on the waste side (save the cutoffs) and sand to the line.

6 Glue the biscuit slots and clamp a bottom end rail (B) and top end rail (C) to an inside slat (D) and two outside slats (E) [**Photo B**], making sure the ends of the rails align. Repeat for the other side assembly.

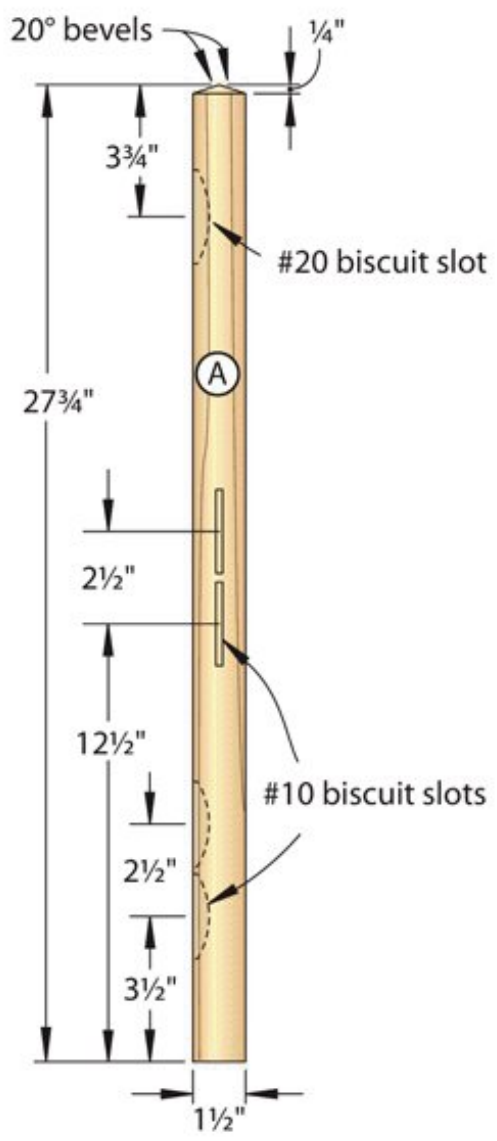
Get the sides on their legs

1 Tilt your tablesaw blade to 20°. Then attach a miter-gauge extension that reaches past your blade and cut an angled kerf in the extension. Place a leg (A) against the extension with one end just touching the kerf, and clamp a long-part stopblock to the extension. (See "Long-Part Stopblock" on *page 20*.) Make two cuts on opposite faces of the leg and check where they meet (without crossing) on the end. Gradually slide the leg and stopblock closer to the blade until the cuts meet in the middle. Then cut all four faces [**Photo C**]. Repeat for each leg.

2 Lay out biscuit locations on two right and two left legs (A) [**Drawing 2**].

Quick Tip! Flash those flecks. Quartersawn white oak displays distinctive flecks you'll want to show off. When organizing the legs into left, right, front, and back, mark the biscuit slots on the faces opposite the most attractive faces. Then cut centered biscuit slots and sand the legs to 150 grit.

2 LEG BISCUIT LAYOUT
(Front right and back left legs)

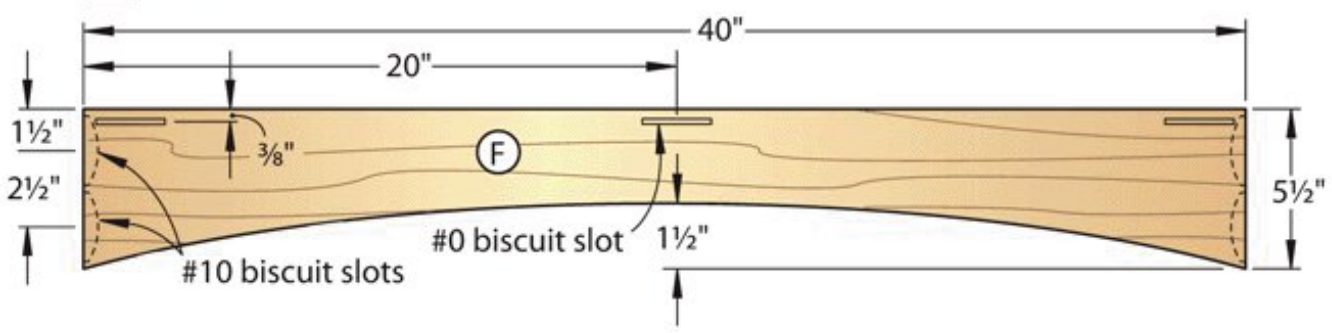


3 Glue and clamp two legs (A) to a side assembly (B–E) [**Photo D**]. Repeat for the other side assembly.

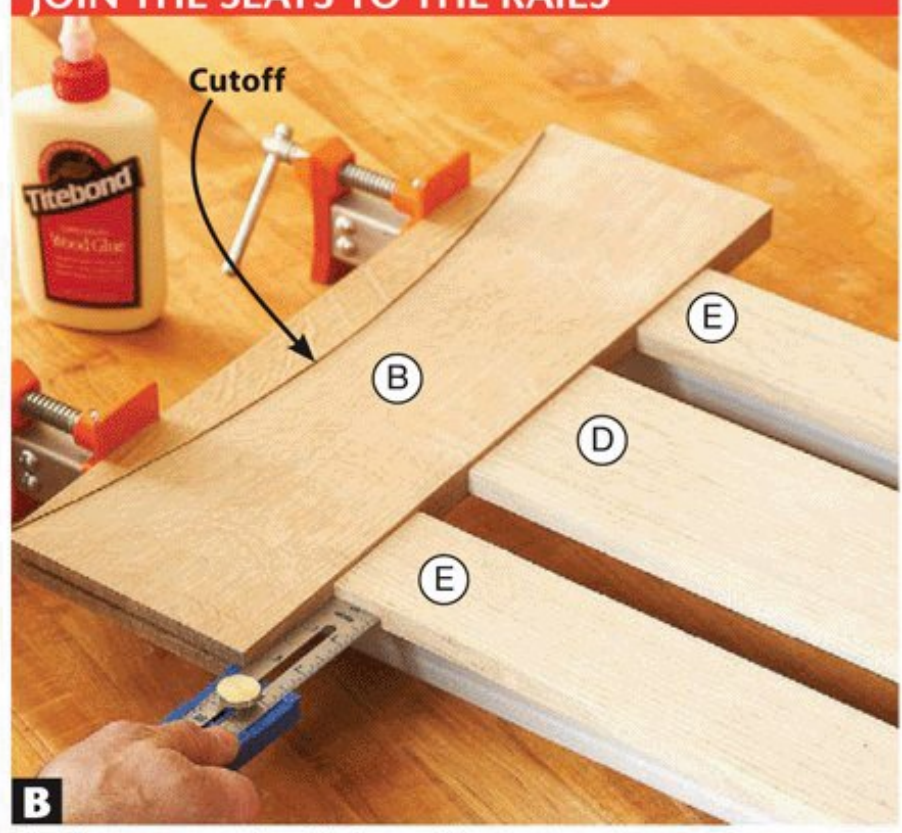
4 Cut the front and back rails (F) about ½" oversize in width. Lay out the biscuit-slot locations [**Drawings 3** and **4**] and cut the slots in the rails. Then lay out the curves, cut on the waste side, and sand to the line.

5 Temporarily clamp the front and back rails (F) to the side assemblies (A–E) and measure between the inside faces for the length of the seat supports (G). Cut the supports to size and drill

3 FRONT/BACK RAIL



JOIN THE SLATS TO THE RAILS



The bottom end rail (B) cutoff creates a straight surface for clamping. Set a square for 2½" to check the outside slat (E) offsets.

CUT BEVELS ON TOP OF THE LEGS

Adjust the miter-gauge stopblock extension until bevels on all four sides of each leg (A) meet in the center.

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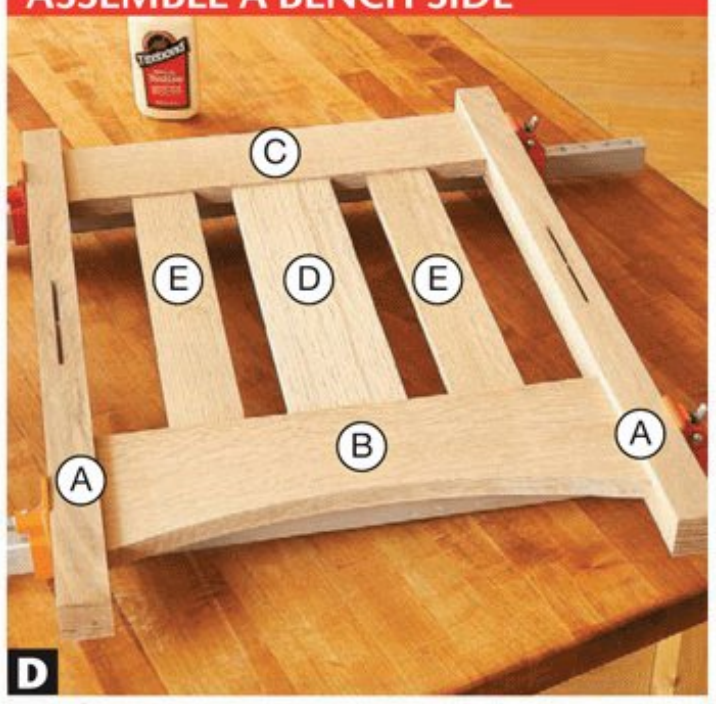
ASSEMBLE A BENCH SIDE



Dry-fit the bottom end rail (B) and top end rail (C) to the legs to check biscuit-slot alignments before adding glue to the slots.

GLUE CLEATS TO THE LONG RAILS

Tape clamps to prevent squeeze-out from discoloring the wood. Then cant clamps to align the screws with the seat supports (G).

GLUE AND CLAMP THE FRAME

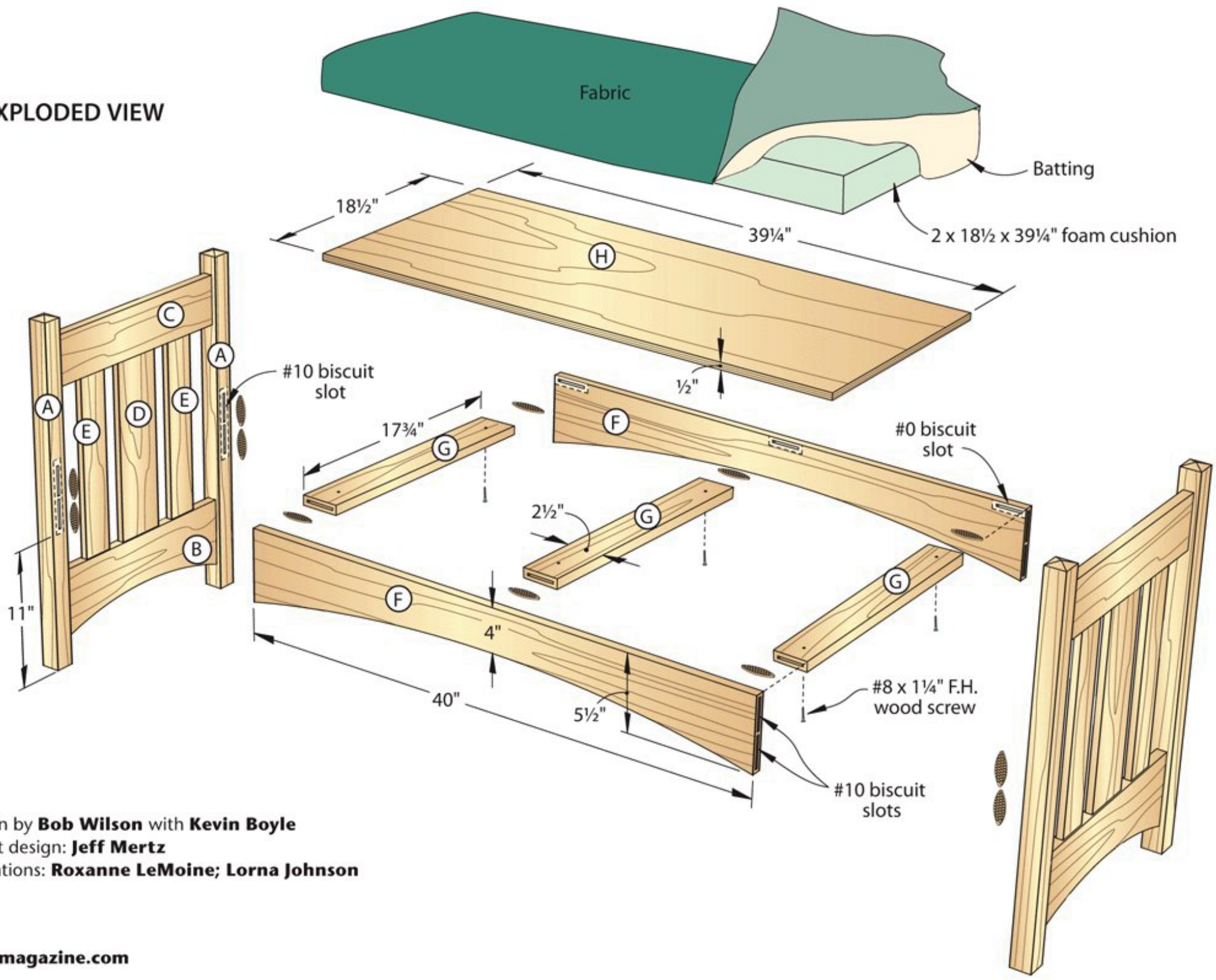
Elevating the bottom side assembly provides clamp clearance. After clamping, rest all four legs on a level surface and check for square.

and countersink ⅛" mounting holes. Glue and clamp the supports to the front and back rails [**Photo E**]. After the glue dries, sand to 150 grit.

6 Elevate one of the side assemblies (A–E) off the floor [**Photo F**]. Glue the front and back rails (F), add the second side assembly, and clamp. Finish-sand the completed bench frame to 150 grit.

7 To stain the quartersawn white oak flecks and surrounding wood evenly, apply Lockwood no. 144 Early American Maple Golden Amber dye. (Keep a wet, feathered edge as you work and avoid lap marks.) After the dye dries, stain with Varathane Traditional Pecan no. 218 to even out the dye color. Apply two clear coats of water-based satin finish. (We used Old Masters acrylic.)

4 EXPLODED VIEW



Written by **Bob Wilson** with **Kevin Boyle**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

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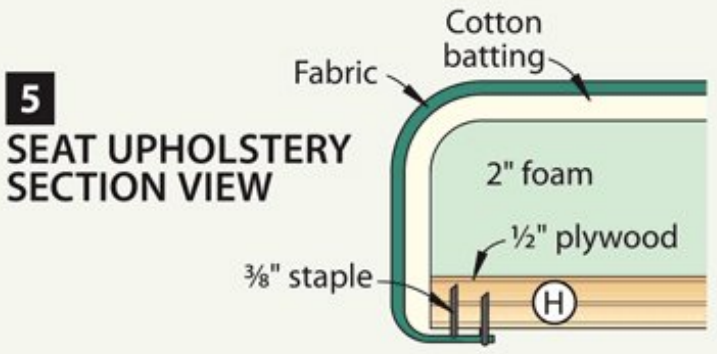
Add a soft seat

There's nothing tricky about this simple upholstery job if you:

- Work on a clean surface.
- Avoid wrinkles in the batting that will show through the fabric.
- Pull the fabric tight around the seat and between staples as you work.



CUT THE FOAM CUSHION TO SIZE

Use the seat (H) as a pattern to cut a piece of 2"-thick upholstery foam using a utility knife or an electric carving knife.

STAPLE BATTING OVER THE FOAM

Cut batting to fit around the foam and seat (H). Pull the batting snug and fasten it to the seat about every 2" using ⅜" staples.

FASTEN FABRIC TO THE SEAT

Beginning on a long side, pull the fabric up, fold the edge underneath, and staple it to the seat every 2".

BEGIN PULLING CORNERS TIGHT

Pull the fabric tight and staple the opposite side and both ends. Then begin gathering the fabric at the corners.

FOLDS ELIMINATE WRINKLES

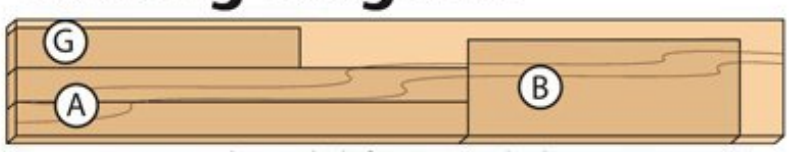
Pull and fold the fabric to reduce the number of wrinkles along the sides. Cut off excess fabric and staple each corner.

Add the seat and sit a spell

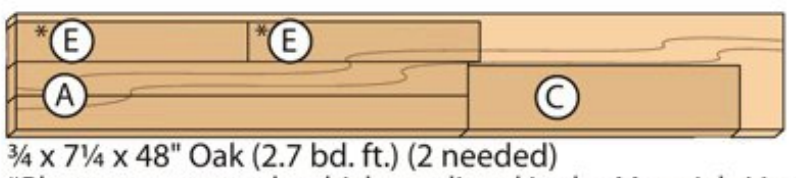
1 Cut the seat (H) to size and follow the instructions *above* to make an upholstered seat [**Drawing 5**].

2 Lay the bench centered on the upholstered seat (H) and screw it to the seat supports (G). Now plant your newly completed bench anywhere you need a handy seat.

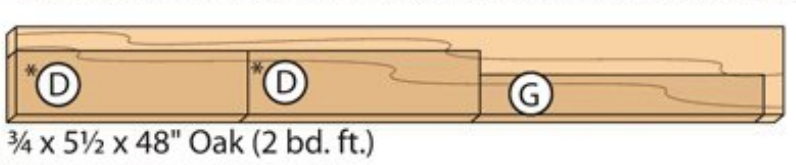
Cutting Diagram



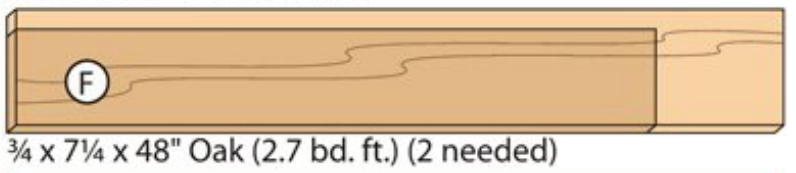
¾ x 7¼ x 48" Oak (2.7 bd. ft.) (2 needed)



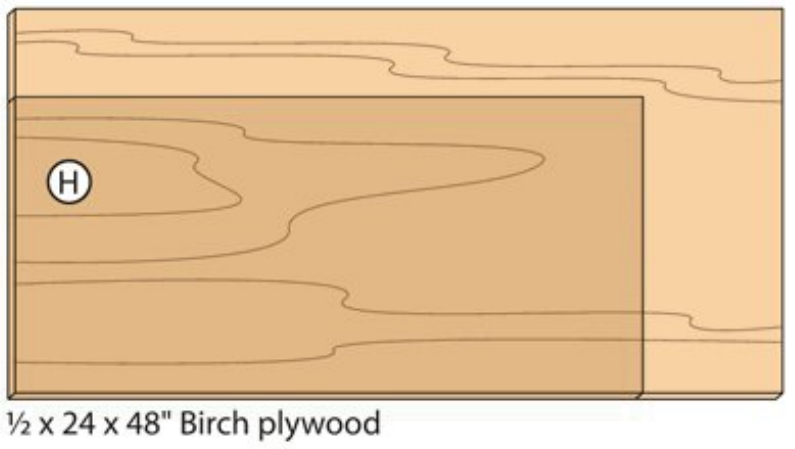
¾ x 7¼ x 48" Oak (2.7 bd. ft.) (2 needed)
*Plane or resaw to the thickness listed in the Materials List.



¾ x 5½ x 48" Oak (2 bd. ft.)



¾ x 7¼ x 48" Oak (2.7 bd. ft.) (2 needed)



½ x 24 x 48" Birch plywood

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	1½"	1½"	27¾"	O	4
B*	bottom end rails	¾"	5½"	17"	O	2
C	top end rails	¾"	4"	17"	O	2
D	inside slats	½"	4"	14½"	O	2
E	outside slats	½"	2½"	14½"	O	4
F*	front/back rails	¾"	5½"	40"	O	2
G	seat supports	¾"	2½"	17¾"	O	3
H	seat	½"	18½"	39¼"	BP	1

*Parts initially cut oversize. See the instructions.

Materials key: O–oak (quartersawn white oak is preferred), BP–birch plywood.
Supplies: #8×1¼" flathead wood screws (6); #0, #10, and #20 biscuits, ⅜" staples. Upholstery foam, batting, and fabric available at fabric shops.

Source

Quartersawn white oak: We obtained the wood to build this bench from the Frank Miller Lumber Co. Call 800-345-2643 or visit frankmiller.com to arrange a mail-order delivery. Lumber may be ordered machined to thickness. See the cutting diagram for quantities. For a guide to other hardwood species, visit the American Hardwood Information Center at hardwoodinfo.com.

MORE RESOURCES

FREE VIDEOS

- Basic Finishing (in three parts) woodmagazine.com/basicfinish

FREE ARTICLES

- For more finishing advice on using dyes, woodmagazine.com/finishes

RELATED ARTICLES

- "Show Off Figure with Dye" issue 157 (September 2004) $ woodmagazine.com/wooddye
- "How to Get Started in Biscuit Joinery" issue 128 (November 2000) $ woodmagazine.com/biscuit

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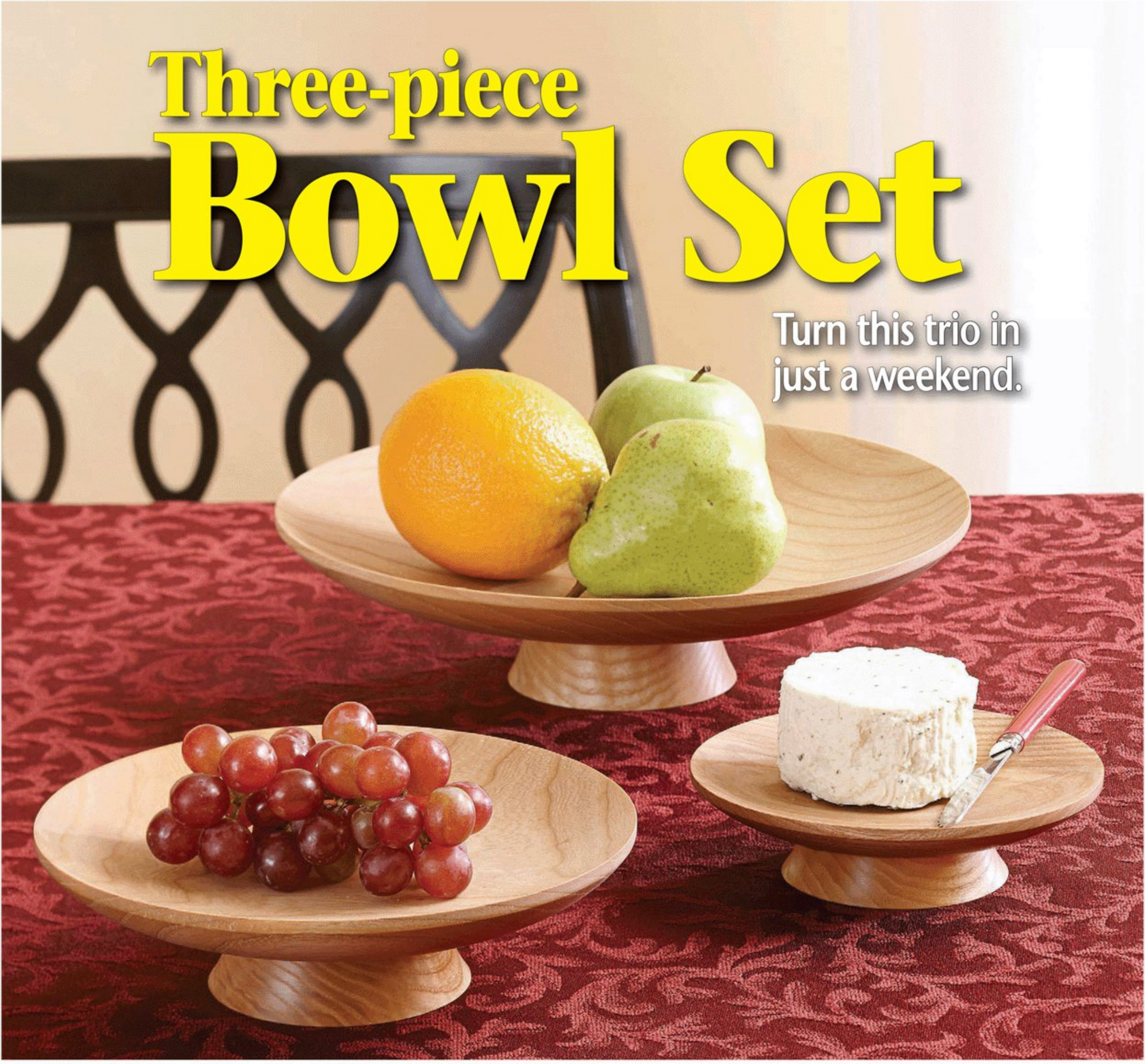
Three-piece Bowl Set

Turn this trio in just a weekend.



The broad, sweeping curves of these bowls allow plenty of room to see what you're doing as you turn, making this an ideal project for even beginners. Using a four-jaw chuck [**More Resources,** *page 37*] leaves no trace of how the work was held on the lathe.

Prepare the bowl and base blanks

For each bowl and base, bandsaw blanks ¼" larger than the finished dimensions **[Materials List]**. Drill a pilot hole centered on one face of each blank to accept your lathe's screw center.

Note: *The ⅞"-deep hole required for the screw-center insert of our four-jaw chuck would have put the hole close to the finished depth of the small bowl. So instead, we drilled a ⅝"-deep hole in the small-bowl blank and slipped a ¼" plywood spacer over the screw center before mounting that blank.*

Photocopy the bowl patterns from the *WOOD Patterns®* insert, spray-mount them to card stock, and cut them to shape. The procedure for turning each bowl and base is the same; only the dimensions change. The patterns contain the dimensions referenced by letters in the drawings and text.

Materials List

Part	FINISHED SIZE T	Diam.	Matl.
large bowl	1¾"	11"	A
large base	1¾"	3¾"	A
medium bowl	1½"	8"	A
medium base	1½"	3½"	A
small bowl	1¼"	6"	A
small base	1¼"	3⅛"	A

Note: Parts initially cut oversize. See the instructions.

Materials key: A–ash.

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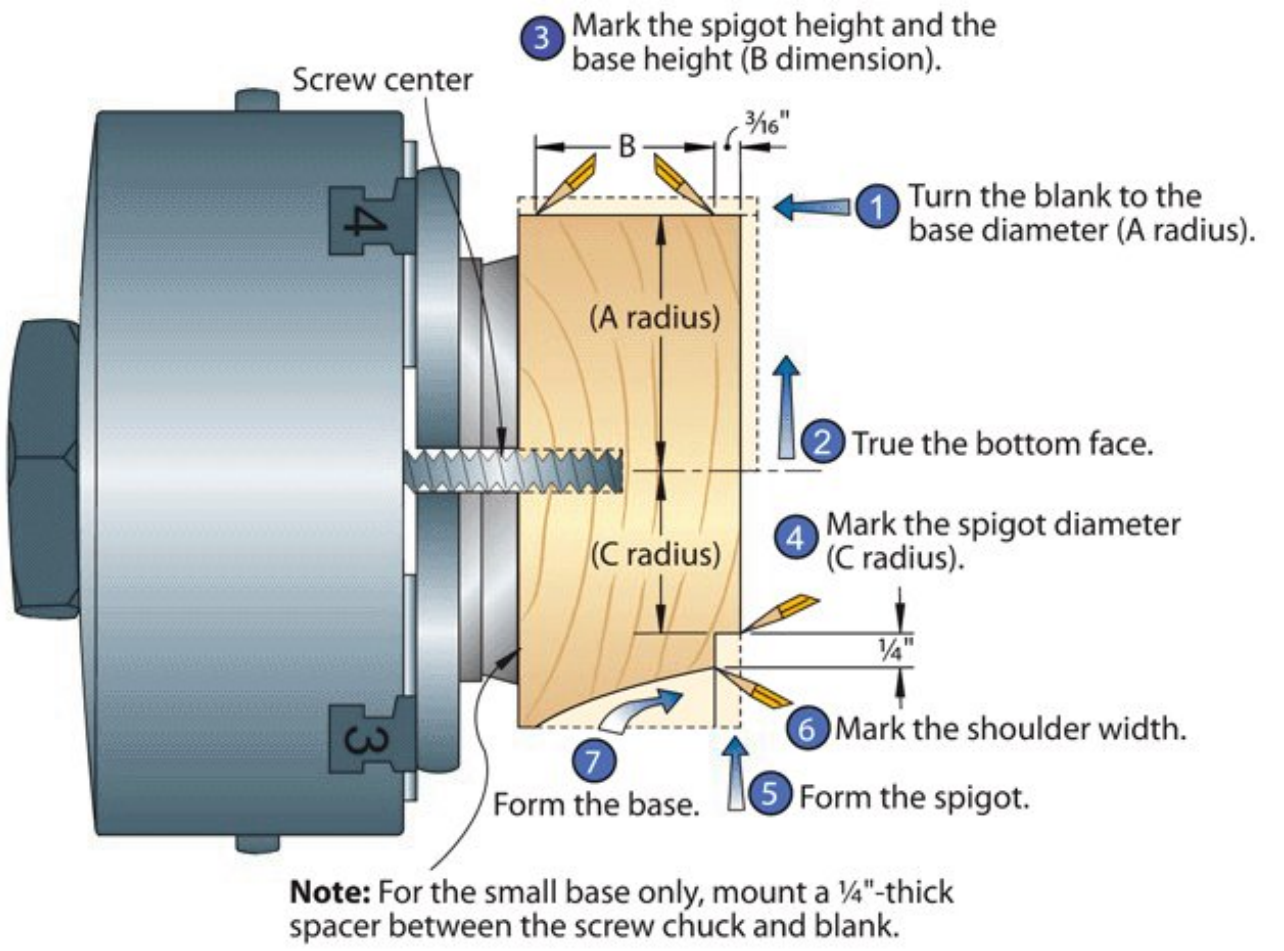
1 Shape the outside of the base

Tools: ⅜" bowl gouge, parting tool
Speed: 600–1,000 rpm

Mount a screw center in your four-jaw chuck and thread a base blank onto the screw center. With the lathe running, mark on the face of the blank the **A** radius listed on the **Base Exterior Pattern**. Using your bowl gouge, reduce the blank diameter to the mark. Move the tool rest perpendicular to the lathe bed and true the face of the blank. Mark the 3⁄16" height of the spigot, the **B** dimension (base height), and the **C** radius (spigot diameter).

Reposition the tool rest parallel to the bed. Cutting in from the edge with your parting tool, form the spigot. To create a flat shoulder, keep the side of the tool against the freshly cut portion as you work. Stop the lathe and test the flatness of the spigot shoulder [**Skill Builder**, *below*]. With the lathe running, mark the shoulder width (¼"). Working from the base bottom toward the spigot, shape the side of the base, *left*. Check your progress with the **Base Exterior Pattern**. After reaching the final shape, sand the curved portion from 150 grit through 320 grit. Don't sand the spigot.



Note: For the small base only, mount a ¼"-thick spacer between the screw chuck and blank.

SKILL BUILDER

A rule for checking flatness and depth

Use a 6" metal rule to check your progress when trueing faces or hollowing. Place the rule across a face to check its flatness, *right*. If you cut in at an angle, the ruler will either rock on the high spot near the spigot or show a gap at the low spot near the spigot.

As you hollow a base or bowl, the full-size pattern helps you check the shape and depth as you near completion. To check your progress along the way, bridge the opening with a straight scrap, *far right*. Measure from the bottom of the scrap to determine the depth and compare it with the final depth (**D** or **H** dimension) shown on the pattern.

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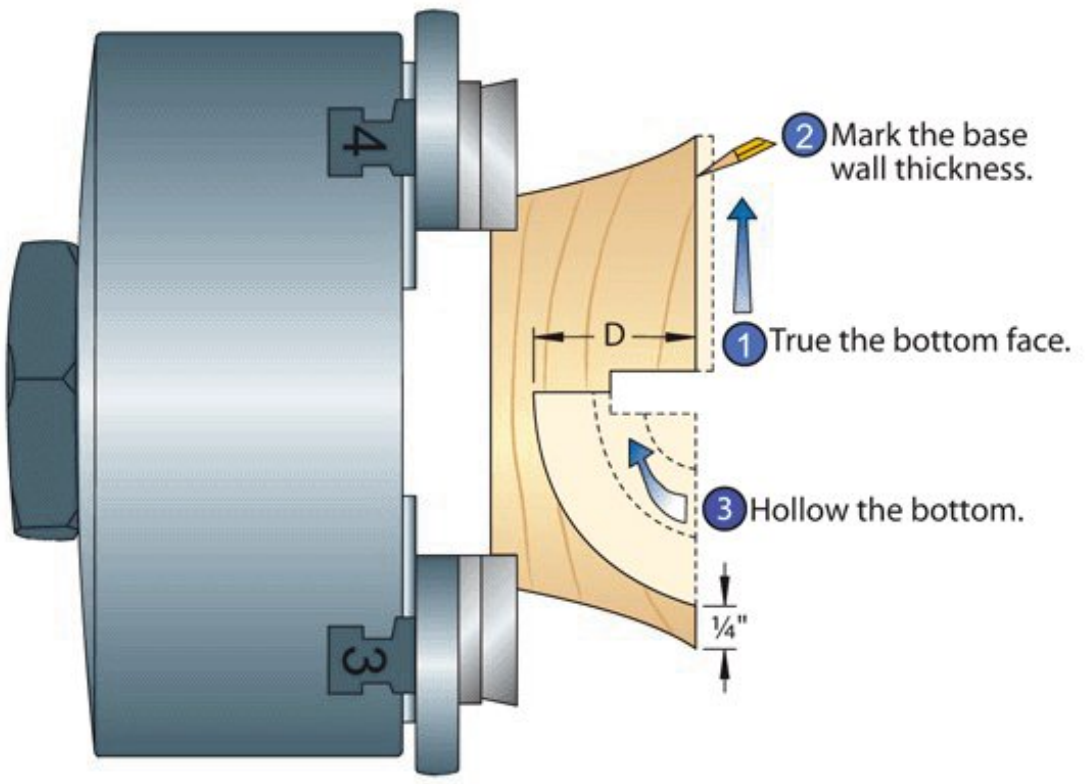
2 Hollow the base

Tool: ⅜" bowl gouge
Speed: 800–1,200 rpm

Remove the base from the screw center and remove the screw center. Grip the spigot in your four-jaw chuck. True the base bottom, bringing the base to final height. Mark the ¼" thickness of the base rim and begin hollowing the base, working from the outside to the center, *left*. Stop the lathe occasionally and gauge your progress, measuring the **D** dimension and checking the shape against the **Base Interior Pattern**.

After reaching the final shape, sand the interior to 320 grit. Stop the lathe and apply a finish inside and out. (We liberally brushed on boiled linseed oil; then, with the lathe running at its slowest speed, wiped off the excess with paper towels. We then stopped the lathe and buffed with a cloth, repeating this process to build four coats.) Remove the base from the lathe and set it aside.

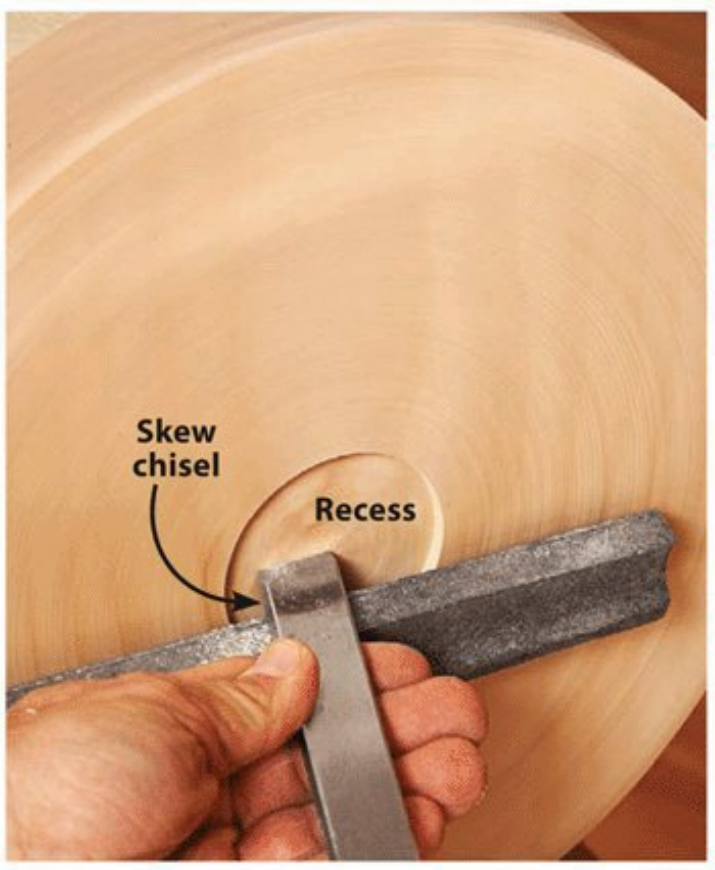


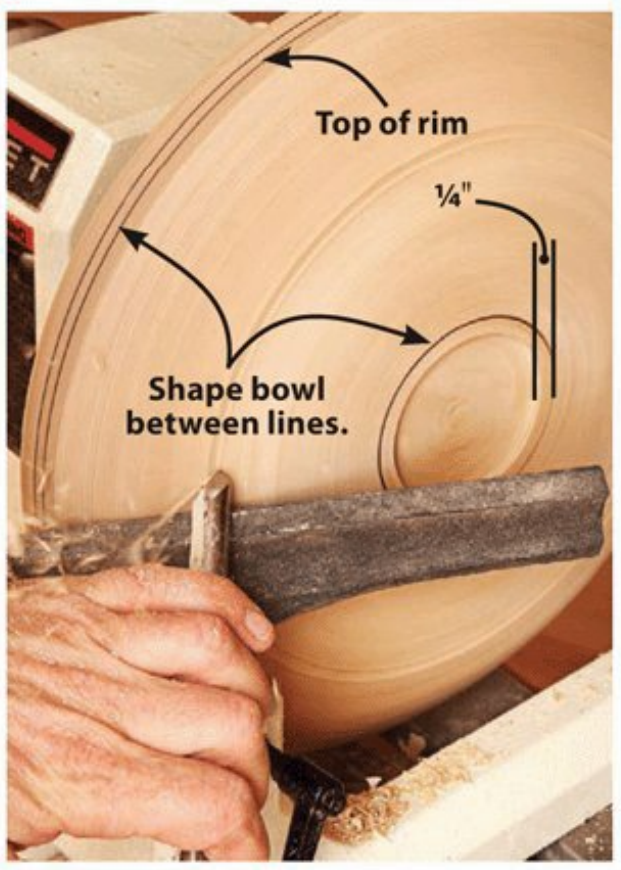
3 Shape the bottom of the bowl

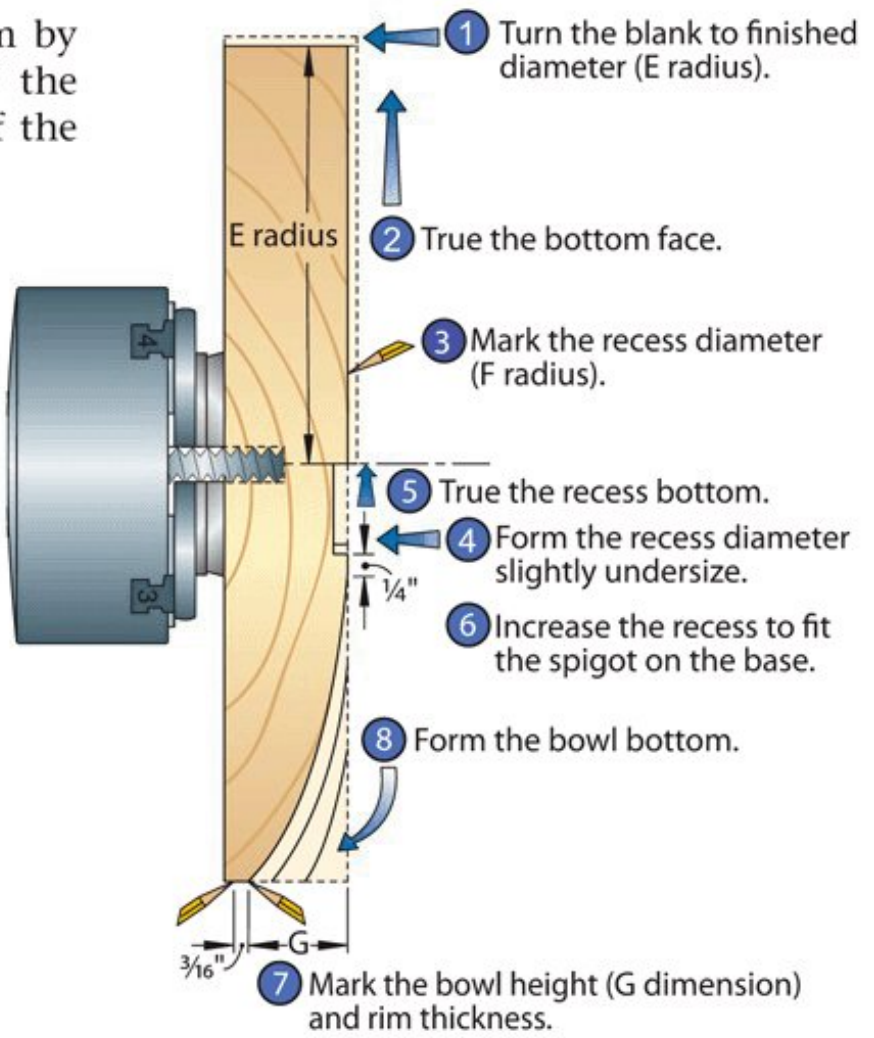
Tools: ⅜" bowl gouge, parting tool, skew chisel
Speed: 600–1,000 rpm

Reinstall the screw center and mount a bowl blank to it. Mark the centerpoint of the blank's face and use the **Bowl Exterior Pattern** to lay out the **E** radius (outside diameter). Turn the blank to this mark, then true the face. Lay out the recess (**F** radius). With your parting tool, begin forming the recess, working inside the layout line so the recess is slightly underdiameter. Switch to a skew chisel and true the recess bottom, *below*; then test the fit of the base spigot in the recess. Increase the diameter of the recess to achieve a press fit of the spigot in the recess. ***Quick Tip! Establish paper-thin tolerances.*** Cover the top of the spigot with two layers of painter's tape, and use the spigot as a depth gauge. The recess is the proper depth when the spigot shoulder just rests on the bowl bottom. Remove the tape after completing the recess.

Lay out the shape of the bottom by marking ¼" from the outside of the recess to indicate the beginning of the arc. Mark the **G** dimension to indicate the end of the arc, and mark the thickness of the rim 3⁄16" above the **G** dimension. Shape the bottom of the bowl, *below center*, working between the first two marks, checking your work against the pattern. Sand the bottom to 320 grit and apply a finish, as you did on the base. Do not apply finish in the recess.






1 Turn the blank to finished diameter (E radius).
E radius
2 True the bottom face.
4
3
3 Mark the recess diameter (F radius).
5 True the recess bottom.
4 Form the recess diameter slightly undersize.
¼"
6 Increase the recess to fit the spigot on the base.
8 Form the bowl bottom.
3⁄16"
G
7 Mark the bowl height (G dimension) and rim thickness.

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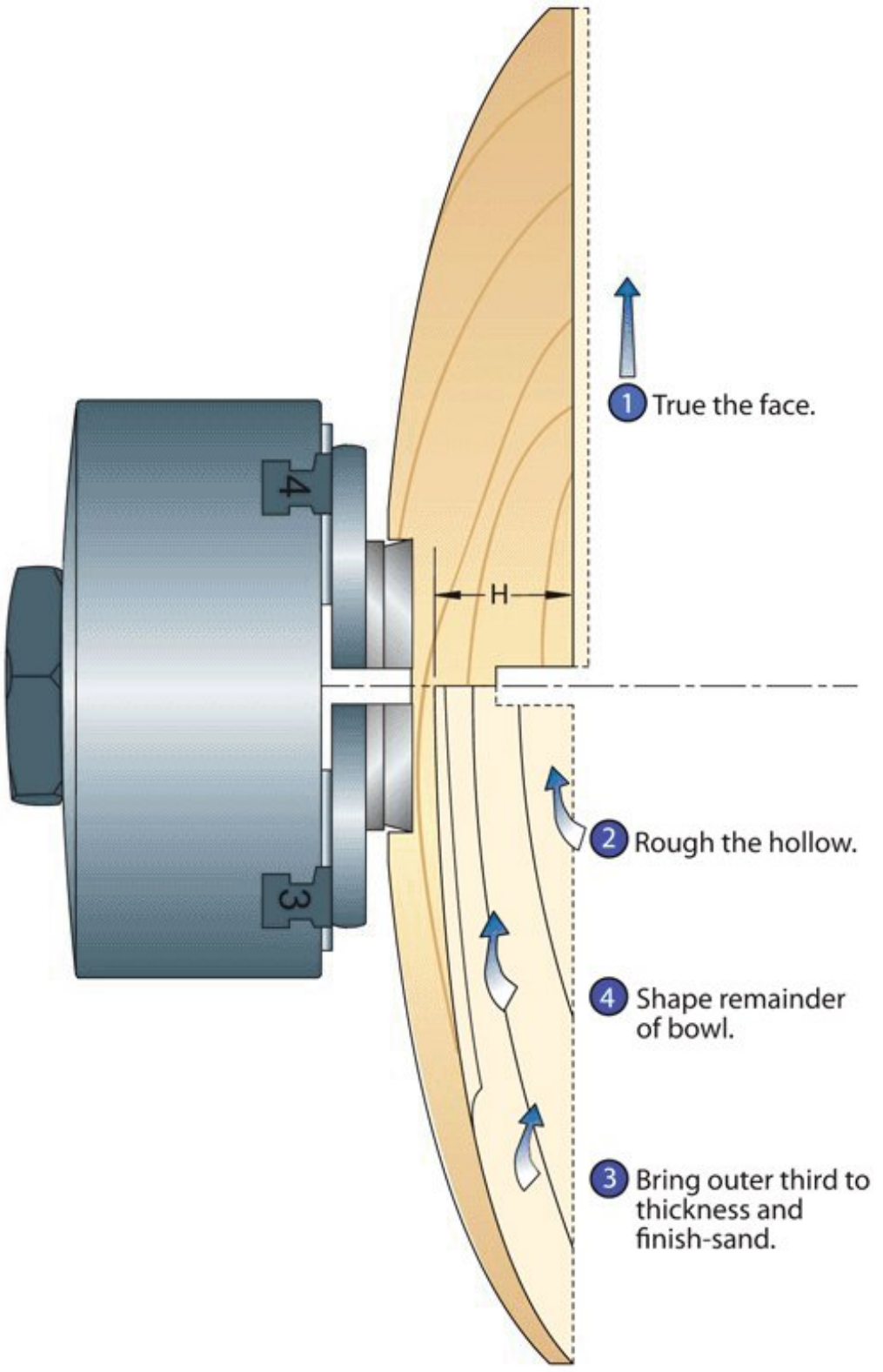
4 Hollow the bowl

Tool: ⅜" bowl gouge
Speed: 800–1,200 rpm

Reverse the bowl, remove the screw center, and grip the recess in the four-jaw chuck. True the blank face, bringing it to final thickness (the rim thickness marked in the previous step). Begin hollowing the bowl, cutting toward the center, gradually enlarging the interior diameter, until you reach the outside diameter. Keep working from the outside toward the center until the curve matches the **Bowl Interior Pattern**. (See the **Skill Builder** *below* for tips on shaping the large bowl.) Sand the bowl with 150-, 220-, and 320-grit sandpaper.

Apply a finish as before. After the finish dries, glue each base to its bowl, placing weight (such as a one-gallon can of paint) in the bowl to apply pressure. Once the glue dries, brush on a final coat of oil, wipe away the excess, and allow it to cure thoroughly before placing food in the bowls.



Produced by **Craig Ruegsegger** with **Jeff Mertz**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

SKILL BUILDER

Keeping a large bowl stable

Hollowing and sanding the largest of the three bowls requires working in stages from the outside in. If you turn the full diameter of the bowl to thickness, the bowl may flex as you sand the outside edge.

To work around this, turn only one-third of the outer diameter of the bowl to final thickness [**photo**]. Then sand this area to 320 grit, keeping your left hand behind the bowl to provide support. Finish the large bowl by cutting from the just-completed area toward the center, bringing the remainder of the bowl to final thickness. Take light cuts to blend the outer area with the inner area, then sand the inner area through 320 grit.

MORE RESOURCES

- Read and download a free article about using a four-jaw chuck at woodmagazine.com/4jawchuck.

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Spot-on Tablesaw Crosscuts

6 ways to get the results you're after with minimal hassle

We all strive for clean and accurate tablesaw cuts. In chasing perfection, though, we often spend much more time setting up a cut than actually making it. Here's how to safely get great crosscuts in less time.

Extend your miter gauge

A bare-bones, standard-issue miter gauge benefits from the addition of an extension, a straight scrap of plywood or MDF screwed to the gauge so it extends past the blade. This provides a couple of advantages: A saw kerf cut into the extension, as shown, shows precisely where the blade will cut, and the wood around the kerf provides zero-clearance protection against tear-out.

Measure from the kerf for fast, precise cuts

Clamp on a simple self-squaring stopblock for cutting multiple parts to precisely the same length. Using a steel rule for its hyper-accurate precision, position the stopblock quickly by measuring from the edge of the kerf. Leave a ¼" gap beneath the stopblock to prevent dust buildup from affecting your cuts.

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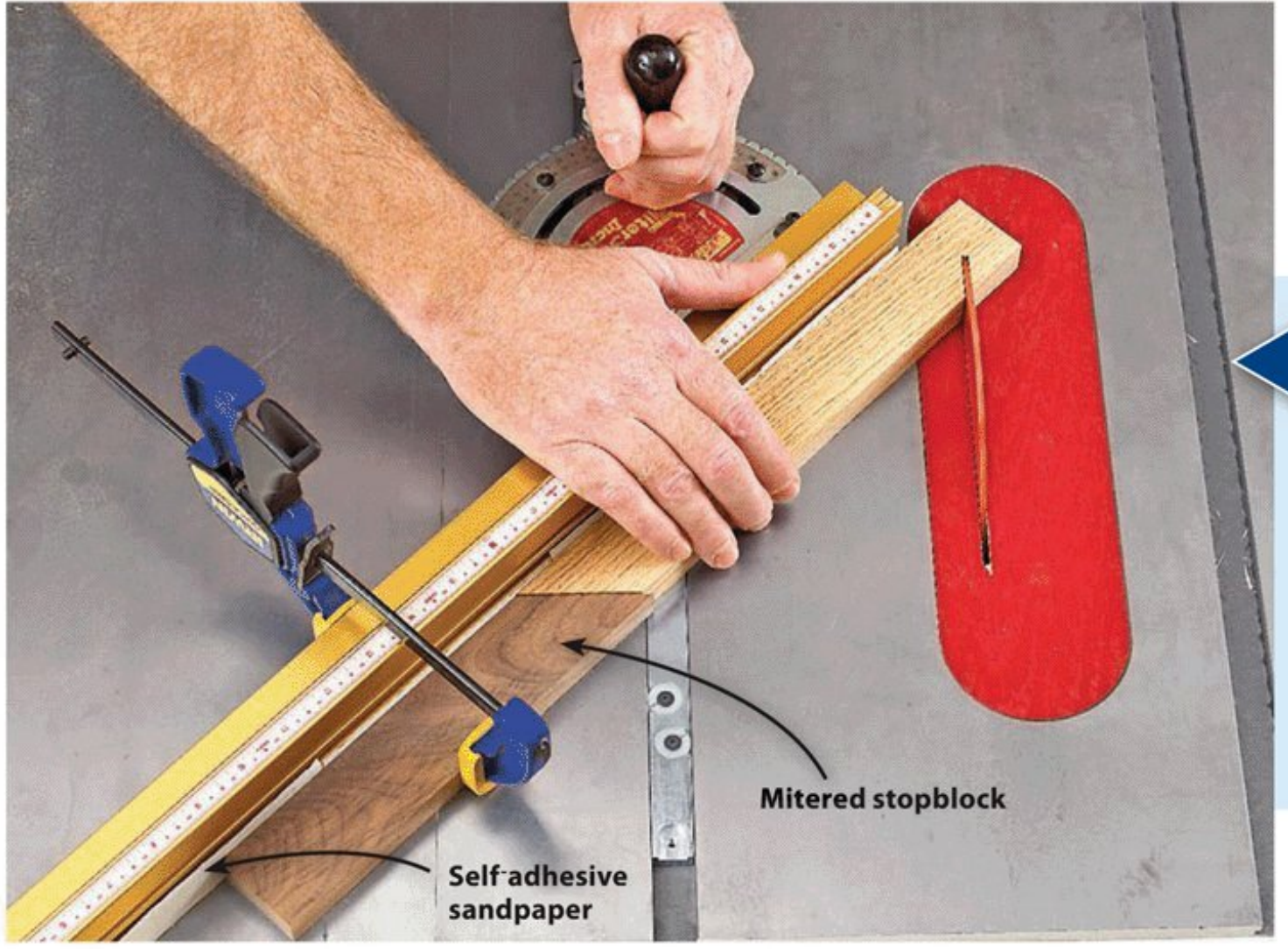


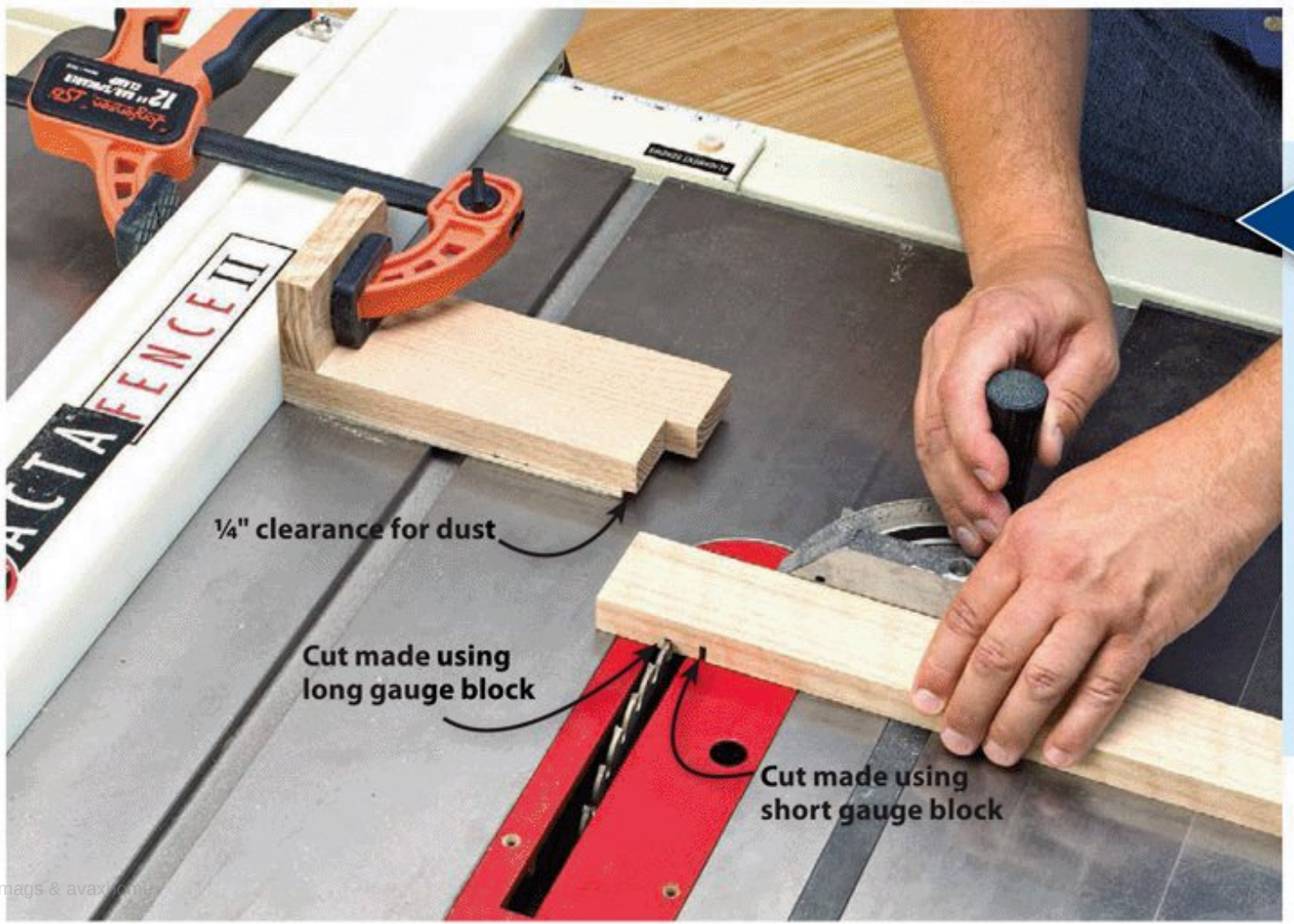
Lock in mitered parts

For parts with mitered ends, such as picture-frame sides, use a stopblock with the complementary angle. This provides a more positive "lock" than a rectangular block. Apply 120-grit, self-adhesive sandpaper to the miter-gauge extension for better grip on your workpieces. (See another angled stopblock example on *page 20*.)

Add a stopblock to your rip fence

Sometimes the dimensions of a workpiece prevent you from using a stopblock on a miter-gauge extension. For example, cutting multiple parts of equal length from a 6'-long board might be a problem. Or cutting short pieces would place your hands too close to the blade.

The solution: Use your rip fence as a gauge, as shown at the *top of the opposite page*. To prevent workpiece binding and kickback, always position the stopblock several inches in front of the blade. That way the cutoff falls away freely instead of becoming trapped between the blade and stopblock. And to make setups easier, make your stopblock's width a whole number, such as 2", and then use your fence scale to set the cutoff length—plus the 2".



Do the dado two-step

To cut dadoes without switching to a stacked dado set, make a two-step gauge block with its two steps offset by the desired dado width. Clamp it to your fence as shown. Then, using your crosscut or general-purpose blade, make a cut using each step. Finally, nibble away the middle with repeated passes over the blade.

Written by **Bob Hunter** with **Jeff Mertz** and **Kevin Boyle**

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Organize Your Shop in a Weekend

(and keep it that way for a lifetime)

Imagine a workshop where you can find every tool, jig, and board almost without looking. Whether you're machining lumber, assembling parts, sanding, or finishing, everything you need is situated within easy reach.

Who owns this awesome shop? You do, if you drop the indecision, bad habits, and sloppy housekeeping that lead to clutter and frustration. We'll show how to do that and reorganize your shop to focus on woodworking.

Start with a thorough thinning

First round up some 30-gallon heavy-duty garbage bags, several plastic tubs with lids, and a permanent marker. Inside your shop, empty waste cans and throw away chunks of wood less than 1' long and anything that's obviously trash or broken beyond repair.

Toss or recycle empty tool cases you'll never use again. Strip reusable hardware from jigs customized for tools you no longer own, and toss what's left.

Tools: Don't use 'em? Then lose 'em

Keep the cleanup momentum going by focusing on tools that see little use. Then divide them into three categories:

- Tools not worth selling can be donated to charity.
- Items too valuable to give away, but not worth the hassle of a classified ad, can be sold in the next garage sale.
- Tools worth $50 or more can be sold through a newspaper ad, an online market such as craigslist.org (no-fee, local buyers pick up the tool), or eBay.com (small seller fee, you'll likely have to ship the tool).

Now find a new place for home-repair items that interfere with your woodworking. For example, label one of your plastic tubs "electrical" and fill it with switches, outlets, and electrical tools. Do the same for your plumbing supplies and tools. Fill the third tub with painting supplies, such as rollers, brushes, and paint pans. Then put in tubs any other DIY stuff, such as drywalling tools. If you work in a garage shop, move lawn and garden tools outside the shop area. Toss into a another tub that hodgepodge of project parts, including T-track for jigs

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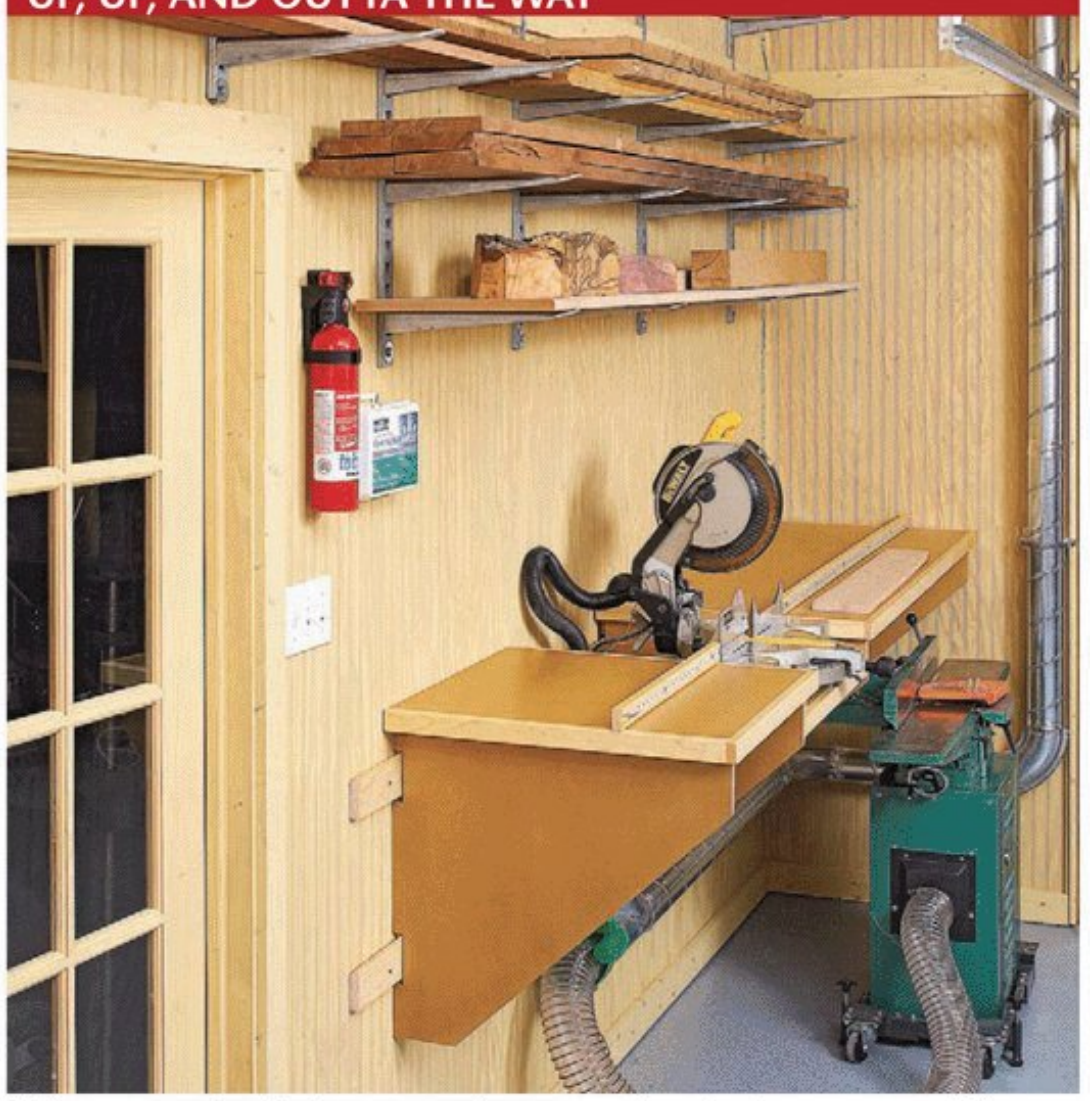

This garage shop's storage system organizes lumber over a cutting center with space below to park the jointer when it's off-duty.

Space beneath this mitersaw bench houses short to medium-length lumber, keeping it flat and off of the floor.

you never built, miscellaneous hardware, and parts for unbuilt projects.

Turning your focus to finishes, cull the water-based finishes discolored by can rust, and oil-based poly with a thick layer of dried finish on top. Then set aside any stains you won't use again. Ask your waste-disposal service about the nearest hazardous-waste disposal site.

Finally, gather up all those cutoffs, scraps, and leftover sheet goods that survived your earlier cleanup. Sort them by type and place everything on overhead racks, as shown *above left*, in some corner away from tools and workspaces, under stairs (in a basement shop), in the rafters of a garage shop, or under counters, as shown *above right*.

Organize your work areas

Now use existing storage and divide the stuff that's left over into work areas, even if your tools ride on mobile bases.

1. The workbench/assembly area. If you build mostly small to medium-size projects or furniture smaller than your bench, position the workbench against a wall to open up floor space for stationary tools. Use nearby walls to hang the tools you use most, as shown at *right*, and bins to hold screws or other fasteners, *far right*. (See **More Resources** on *page 44* for online bin plans.)

Single out your favorite clamps and hang them near your workbench. Then add a shelf for glue, clamping cauls, and squaring braces.

If you build large projects, you'll need access to all four sides of the bench, so move the bench closer to the center of your shop. If that places it near the tablesaw, make the bench do double duty as an outfeed table by raising or lowering the bench height.

2. Machining area. Set up your next work area for sizing, jointing, and planing stock. Create a work triangle, *right*, that lets you move stock quickly between the jointer, planer, and tablesaw. In a garage shop that needs to convert back into parking space, store machines on mobile bases close to the triangle.

Apply the 80/20 rule to your shop and keep the 20 percent of tools and fasteners you use 80 percent of the time within arm's reach.

Put this on your to-do list: Removable shop-made bins keep your most popular fasteners organized, dust-free, and accessible.

Size and square project parts quickly by placing the tablesaw, jointer, and planer within steps of each other.

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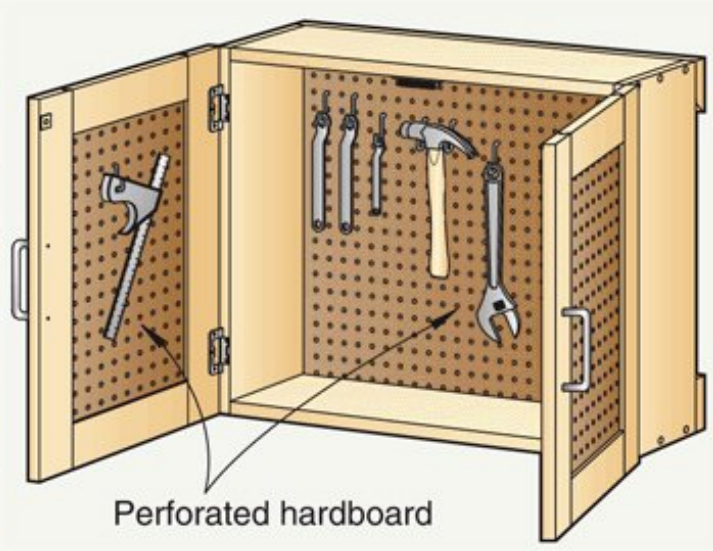
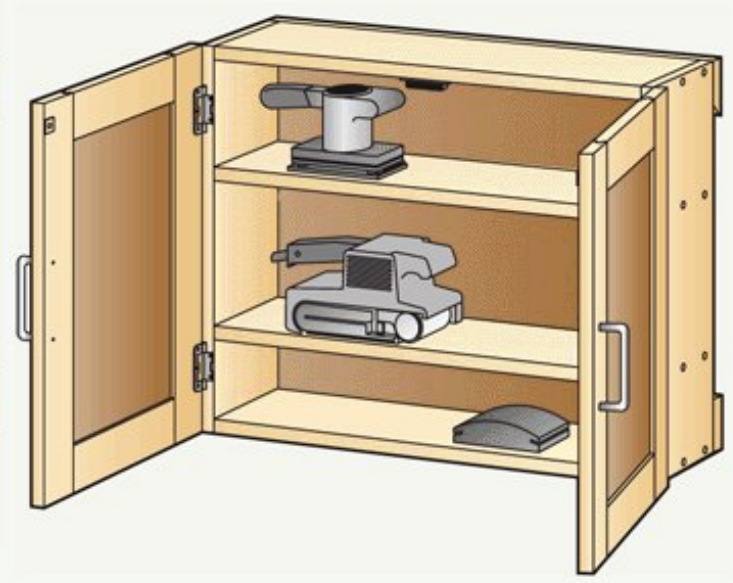
SHOP TIP

Build three versions of one cabinet

Building three storage cabinets doesn't take much longer than building a single one. So while you're building the sanding supplies cabinet (*lower far left*), make duplicate case and door parts to create cabinets for hand and power tools or finishing supplies. (Go to woodmagazine.com/sandpapercabinet to obtain plans.) Each uses hanging cleats for quick shop reorganization. A cleat with a beveled bottom edge mounted to the cabinet back grips a mating wall-mounted cleat with an identical bevel. Gravity holds the two cleats together until you lift off the cabinet.





Now find places for tool accessories. If you have a cabinet saw equipped with an extension table, add shop-made or store-bought shelves underneath it to keep jigs, hold-downs, miter gauges, and blades. Store accessories and jigs for a benchtop or contractor-style saw on shelves or unused lumber racks.

3. Sanding and finishing center. Even if you sand parts and apply finish at your workbench, storing sanding and finishing supplies outside the immediate shop area opens up tool-storage space where you need it most. For now, store abrasive sheets in their sleeves and hang the packages from a hook or nail. For boxed sanding discs, punch a hole in a bottom of the box at one corner, secure the top with a rubber band, and hang it on a peg hook. Later, add a cabinet to hold sanding supplies. (See the **Shop Tip** *above*.) Leave room near the cabinet to park a shop vacuum.

For finishing supplies, consider a ready-to-assemble cabinet from a home center or discount store. If you're concerned about child safety, attach a hasp and lock to the cabinet doors. We've even seen a non-functional freezer turned into finish storage, *right*.

Position the finishes cabinet as far away as possible from your water heater, furnace, or other open-flame appliances. Date each can of finish (with estimates, if you have to) and sort them by film finishes, stains, and solvents. If there's room left, add brushes and accessories.

4. Peripheral storage. Now that you've blocked out spaces for woodworking's three key areas, divide up the remaining space for everything else. Begin with storage for benchtop and portable power tools. Rank each tool from 1 to 3 according to how often you use it. For example, a frequently used cordless drill may rank a 1 while a pneumatic stapler you've only used twice merits a 3. Store the 1s near or beneath your workbench.

Devote the corners of the shop to storing tools on mobile bases, such as a bandsaw, or tools that don't need large infeed/outfeed areas, for example a scrollsaw or sharpening station. (After you're organized, consider giving frequently used portable benchtop tools their own mobile stands or carts to reduce setup time.)

Store the 2s just outside your three main work areas, and tuck away the 3s on shelves or just outside the shop.

Whatever its rank, each tool came with a manual that you'll need someday to fine-tune its setup, order replacement parts, or find the nearest service center. Store these manuals in a heavy-duty three-ring binder filled with plastic page protectors, as shown *below*.

A COOL IDEA FOR FINISHES

A discarded freezer, minus its refrigeration unit, provides lockable, insulated, and air-tight storage for finishes.

PUT MANUALS WITH WRENCHES

In addition to tool owner's manuals and service information, this binder stores setup wrenches for each tool.

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No heavy lifting required

When organizing your shop equipment, it's easier to push a button or piece of paper than hundreds of pounds of tools. To test and visualize different workspaces, use an online shop layout tool, such as the one at grizzly.com, shown *below*. For a low-tech alternative, photocopy the paper tool symbols shown at *bottom* and cut them out. Then move them around on a piece of graph paper marked to represent your shop space.

FIND PLANNING HELP ONLINE

This online shop planner lets you experiment with positioning tools close in size to the ones in your shop.

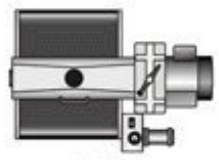
4x8'
Plywood sheet

Radial-arm saw

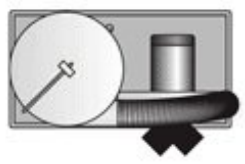
10" Tablesaw
with 30" fence

14" Bandsaw

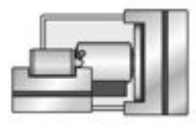
16" Scrollsaw



16"
Drum sander



1,100 CFM dust
collector

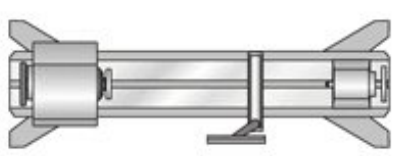


6" Belt, 12"
Disc sander

Router/shaper
24x30" table

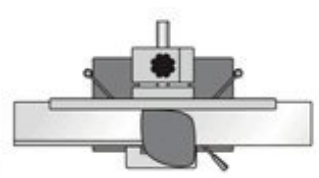
12" Portable planer
on stand

16½"
Drill Press



14" Lathe

Oscillating spindle
sander

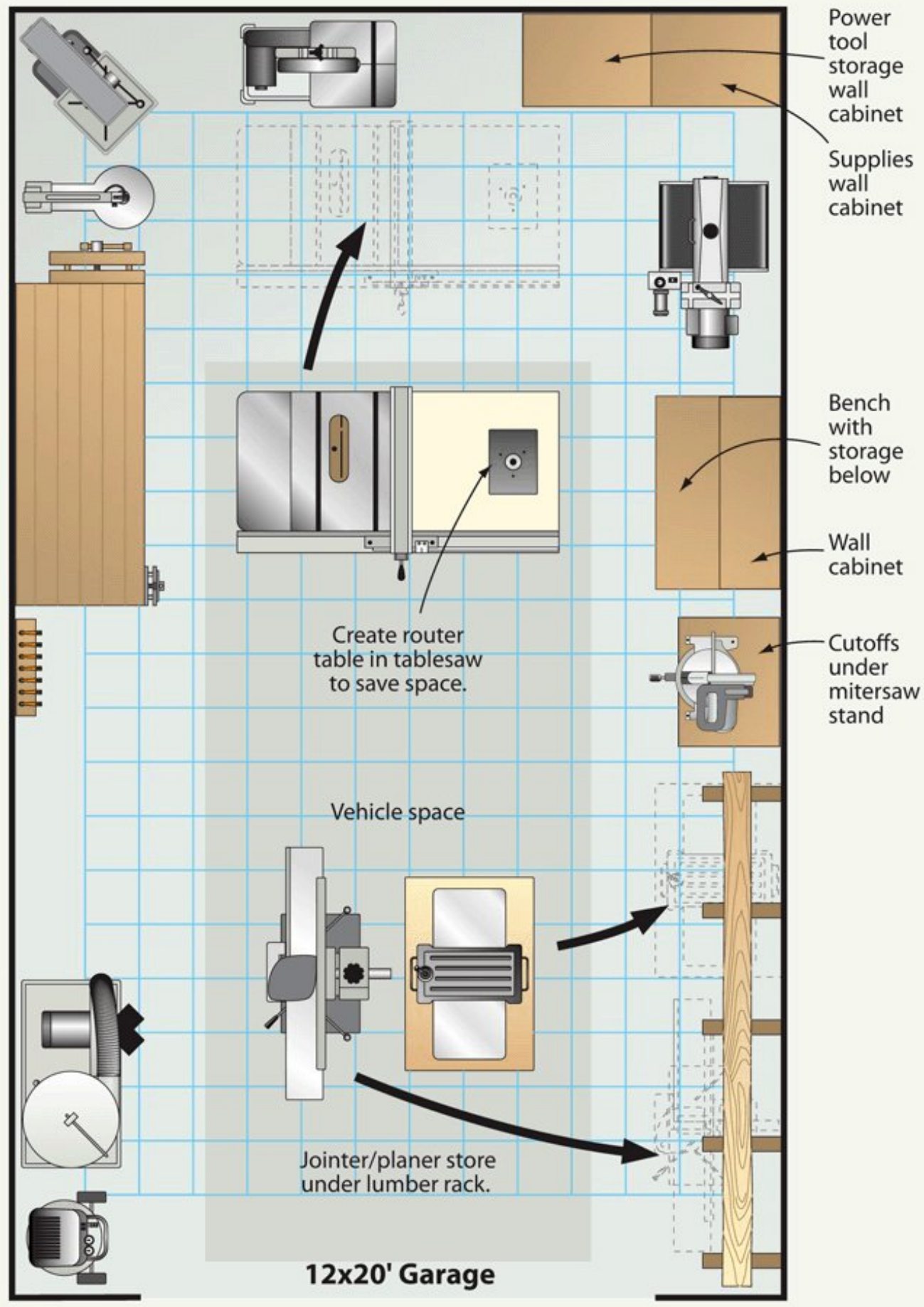


6" Jointer

20-gallon vertical
air compressor

6x96"
Board

24x60"
Workbench


Power tool storage wall cabinet
Supplies wall cabinet
Bench with storage below
Wall cabinet
Cutoffs under mitersaw stand
Create router table in tablesaw to save space.
Vehicle space
"Parked" tools roll into position when needed.
Jointer/planer store under lumber rack.
12x20' Garage

This shop provides a place for everything, including a car!

You can still create workstations, even if they're not permanent. Storing lumber high on the wall of this garage shop leaves room underneath for a planer and jointer. The tablesaw extension router table allows the rip fence to serve both tools.

Outline your shop dimensions on ¼"-square graph paper where each square equals 1'. Then photocopy and cut out the symbols that represent tools you'll position within your shop. Position symbols to allow infeed and outfeed spaces within your layout.

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CHOOSE STORAGE THAT FITS YOUR NEEDS

STORAGE		PROS	CONS	SAMPLE USES
Containers		Keeps similar items together. Sizes range from bins to tubs. No assembly required.	You still need a place to store the containers. Each container requires its own label.	Fasteners (using small, open containers, *left*); plumbing, electrical, and painting supplies (large, lidded tubs).
Perforated hardboard, wall racks		Cheap, versatile, and flexible. Tailor shop-made racks to fit groups of tools or accessories.	Storage depth is limited to peg-hook capacities. Racks take time to plan and make.	Hand tools, power-tool accessories, clamps. Tool storage near a workbench.
Shelves		Inexpensive and easy to install; fixed or adjustable shelf support options; allows rolling storage underneath.	Can look cluttered, even when organized.	Portable power tools, lumber, benchtop tools, jigs, and small containers.
Cabinets		Combines the storage of dust-free shallow drawers and deep cabinets. Base-cabinet tops become work surfaces.	More expensive and time-consuming to make than shelves. May only hide clutter.	Portable power tools, finishes (*left*), and hand tools.
Carts		Perfect for garage shops to make room for cars. Tops double as assembly surfaces.	More costly than cabinets. Require time to design and make. Use up floor space.	Benchtop tools, clamps and tablesaw accessories. Some can be turned into router tables, *left*.

Now keep things in order

As you upgrade your storage arrangements using containers or open bins, invest in an inexpensive label maker to identify their contents, *below*. Remember: Hardware or tools you can't find are the same as ones you don't own.

Next prioritize the shop organizers you'd like to build. Start with the easy ones that give you the most efficiency for your time and money. For examples of storage cabinets and carts, go to woodmagazine.com/shopstorage.

Many *WOOD*® magazine shop-storage projects rely on mating cleats screwed to cabinet backs and walls, *right*, that you can apply to your own wall-hung projects. This makes it easy to rearrange organizers as the shop layout changes.

Then develop rules for maintaining your shop, such as the ones at *right*. If you slip up, don't give up. Simply make time to put things back in order before your next project. Treat clutter like you'd treat rust: Don't wait for it to cover everything before you eliminate it.

Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

MAKE BINS EASY TO IDENTIFY

Adhesive labels on these open bins make the contents easy to spot and encourage you to keep hardware sorted by size and type.

NOTHING BEATS CLEATS

Cleats with mating bevels let you add or move cabinets, perforated-hardboard panels, and racks to reorganize your shop.

Workshop Rules of Order

- ✔ If you can't decide where to store something, ask yourself if it had a purpose in the first place.
- ✔ If you don't want a mess waiting for you when you enter your shop, don't leave one when you go.
- ✔ There's no sin in leaving empty spaces inside your shop. You're not loading the dishwasher.
- ✔ Maintain your shop by work zones. Tidying the sanding area sounds a lot more doable than straightening the shop when you only have a few minutes to spare.
- ✔ Respect the work zones you've created and store everything in its place.
- ✔ Forget multitasking. When two projects occupy your workbench at the same time, one of them isn't getting done.
- ✔ You can't build a project unless you can find its plan. So file patterns and plans by broad categories, such as "furniture," "boxes," or "toys."
- ✔ Store only the lumber you need for an upcoming project, or find lumber storage outside the shop. Let the lumberyard store the rest.
- ✔ If clutter begins to spread, reverse it by making a habit of putting away three things for every object you pull out of storage.

MORE RESOURCES

STORAGE PROJECT PLANS

- "Take-Anywhere Hardware Bins" issue 165 (October 2005) woodmagazine.com/hardwarebin. $
- "Rolling Workshop Storage" issue 167 (December/January 2005/2006) woodmagazine.com/woodplugs. $
- "Shop Cart/Workbench" issue 185 (September 2008) woodmagazine.com/cartbench. $
- "Bench Tool System" issue 179 (December/January 2005/2006) woodmagazine.com/benchtoolsystem. $

($=Download this article for a small fee.)

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Better Homes and Gardens®
WOOD® PATTERNS®
October 2010 Issue 200

Dear Reader: As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Materials List and the drawings accompanying the project you're building.

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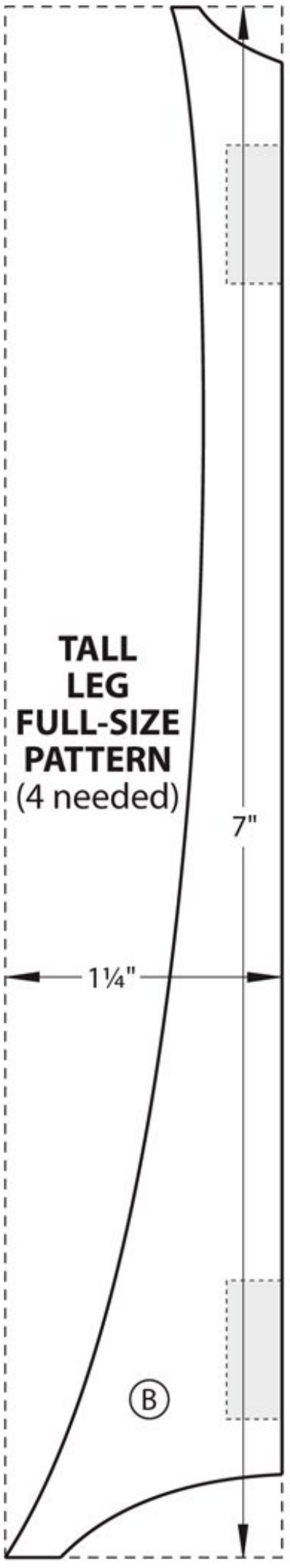
Candleholder Set
Page 54



TALL LEG FULL-SIZE PATTERN
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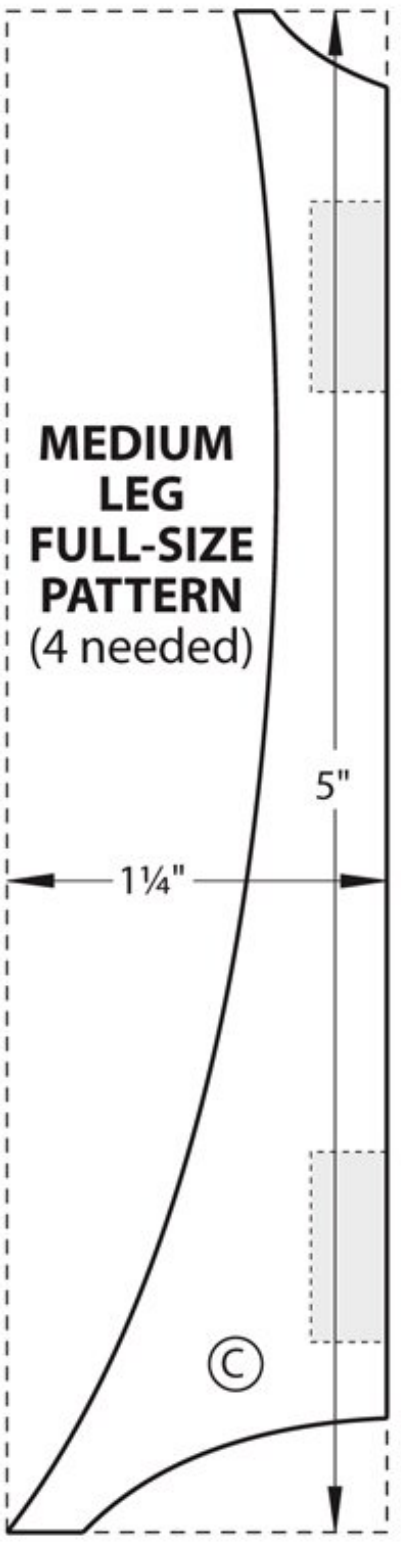

MEDIUM LEG FULL-SIZE PATTERN
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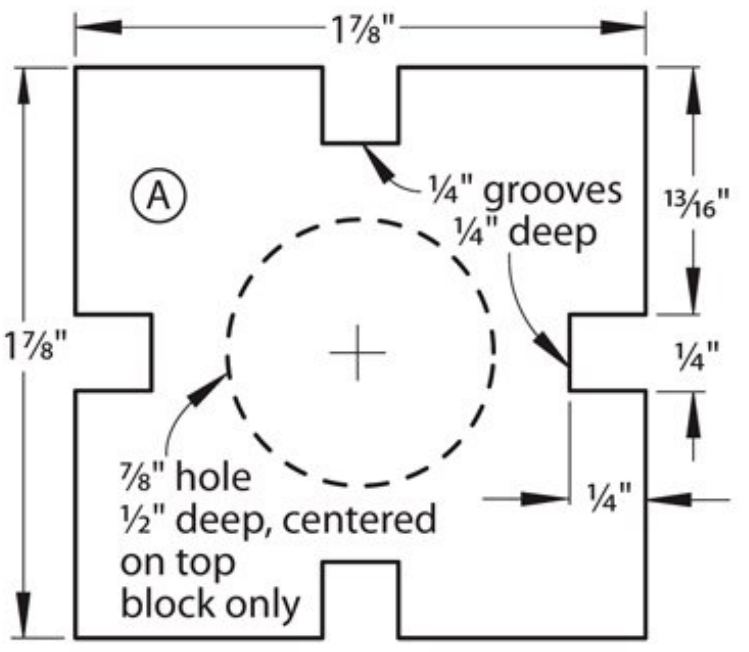

BLOCKS FULL-SIZE PATTERN
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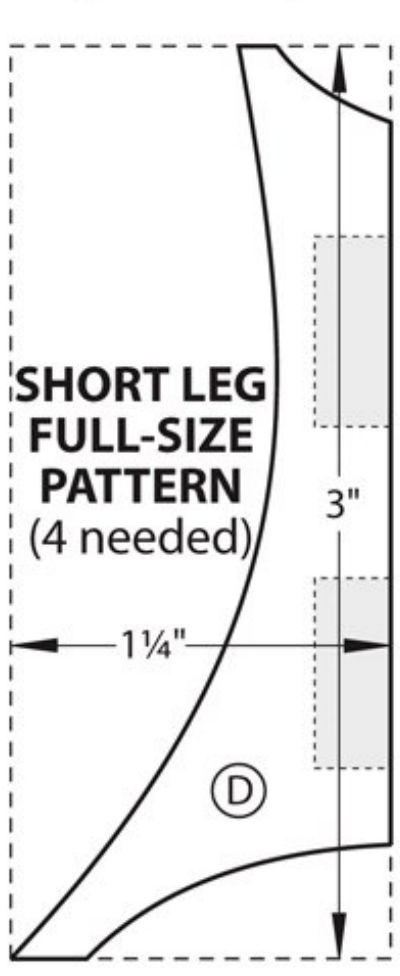

SHORT LEG FULL-SIZE PATTERN
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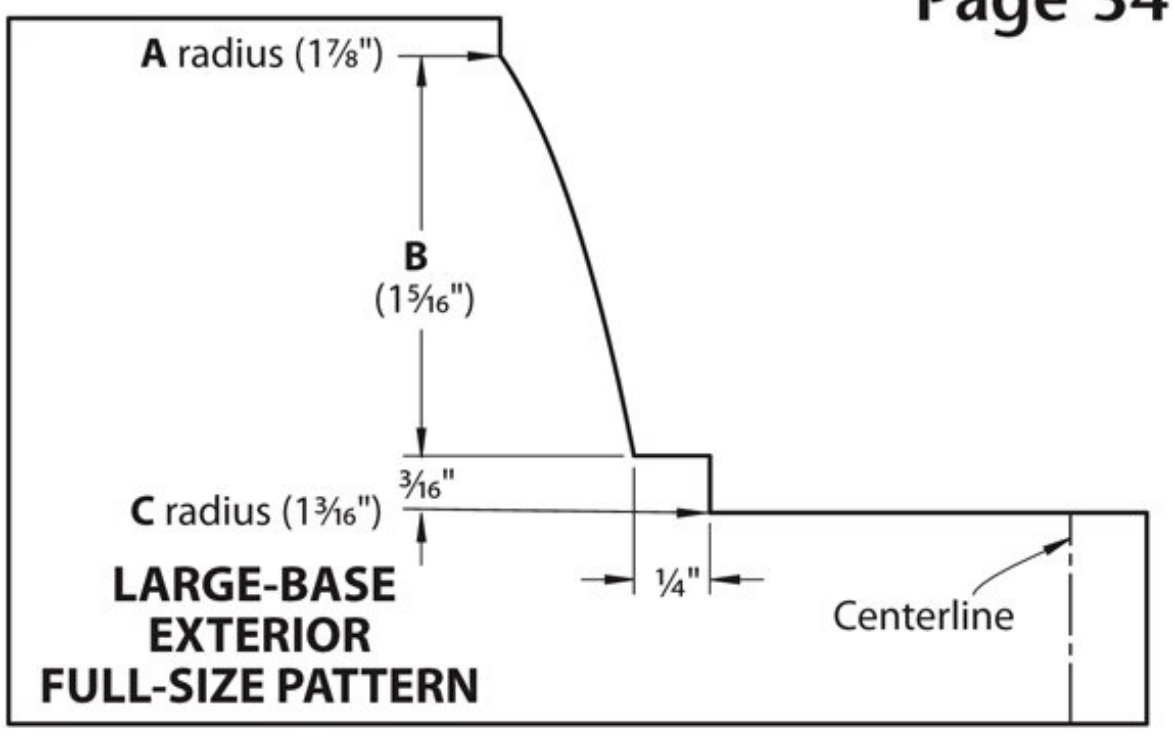
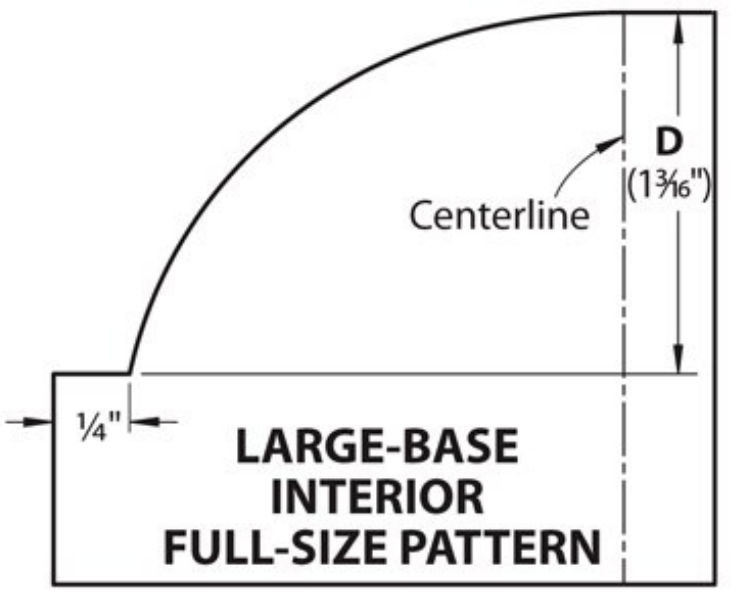
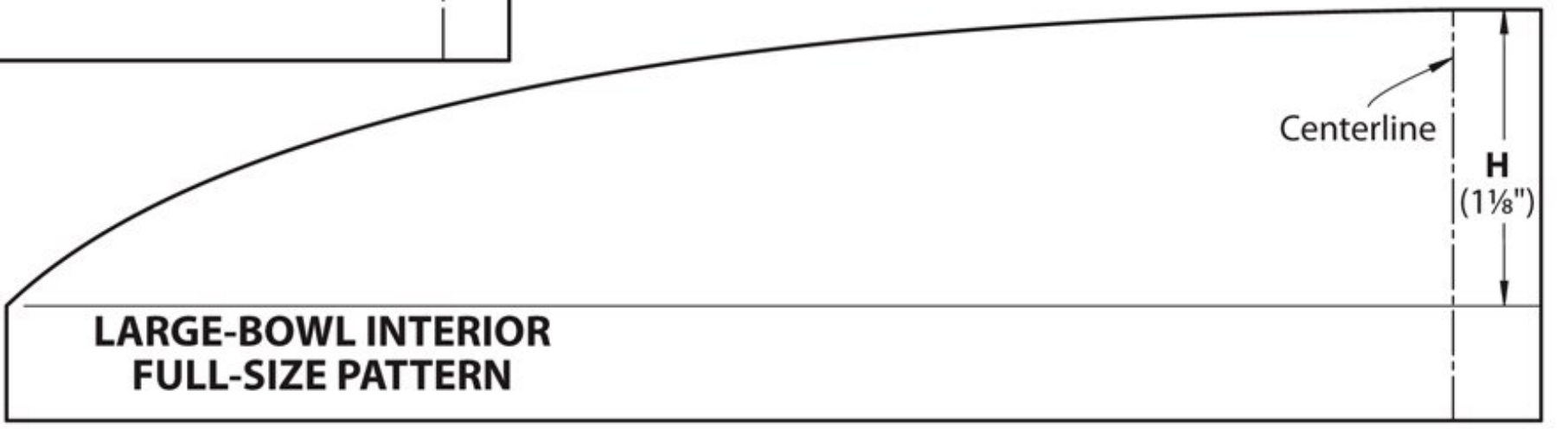
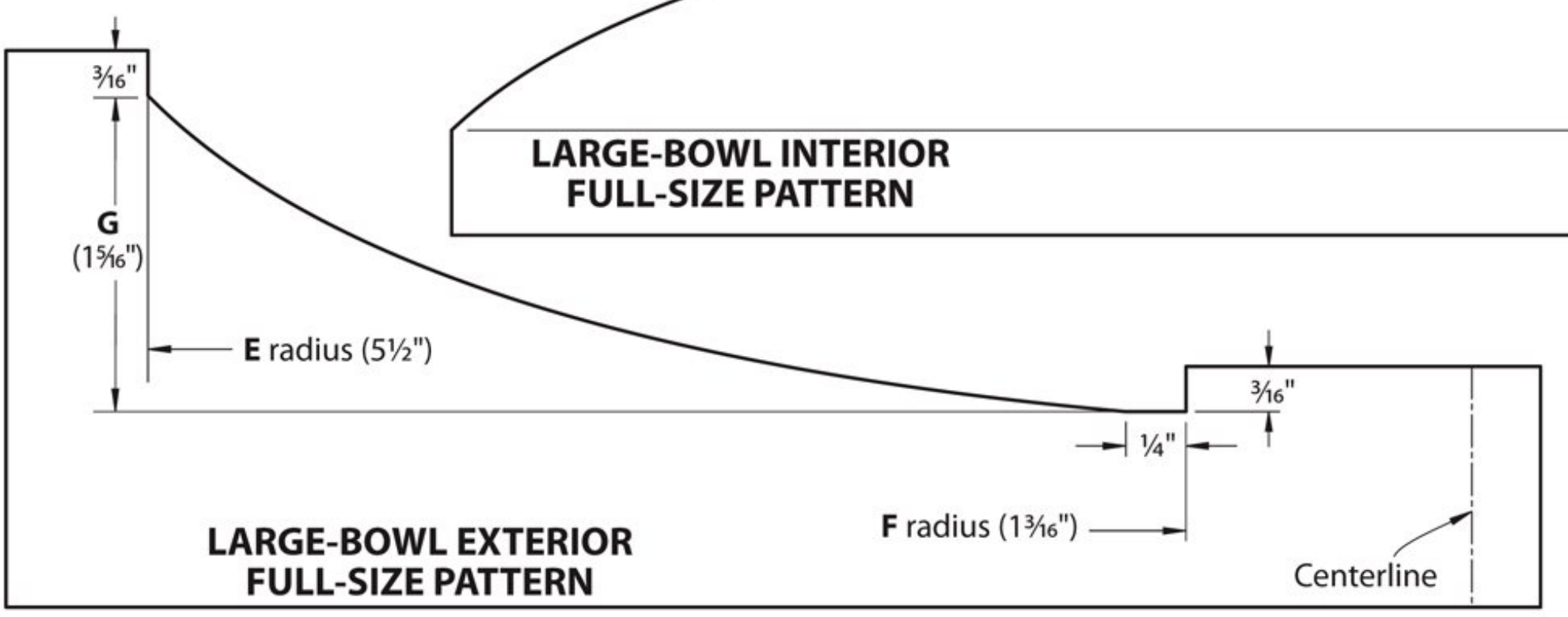
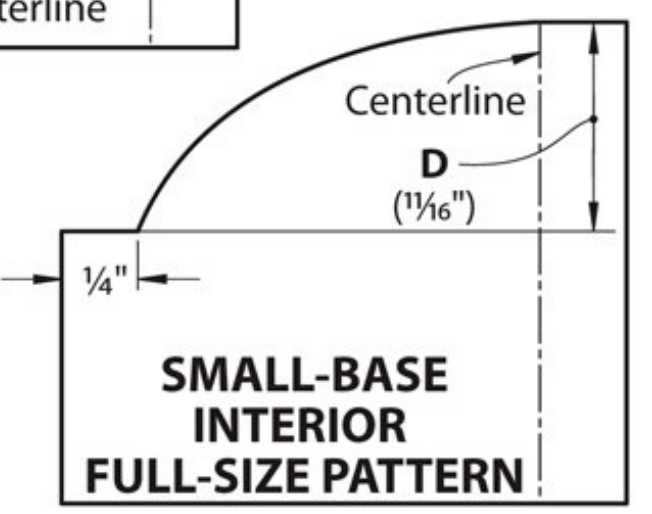
Three-piece Bowl Set
Page 34

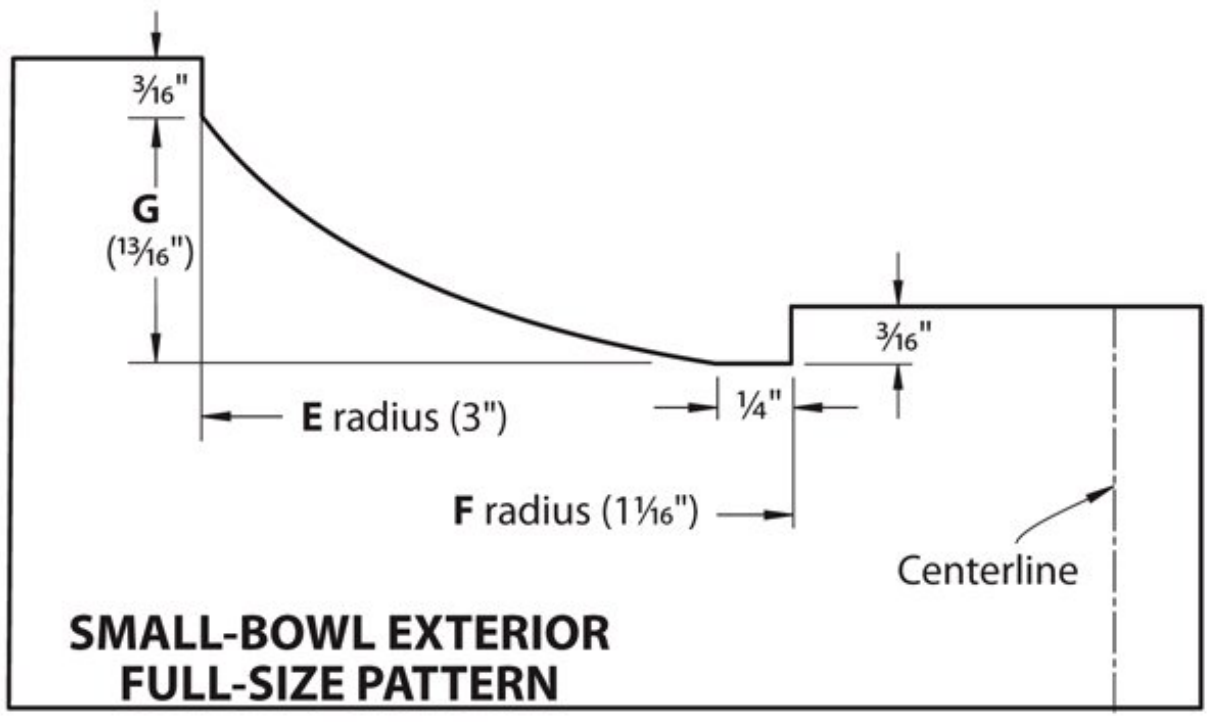


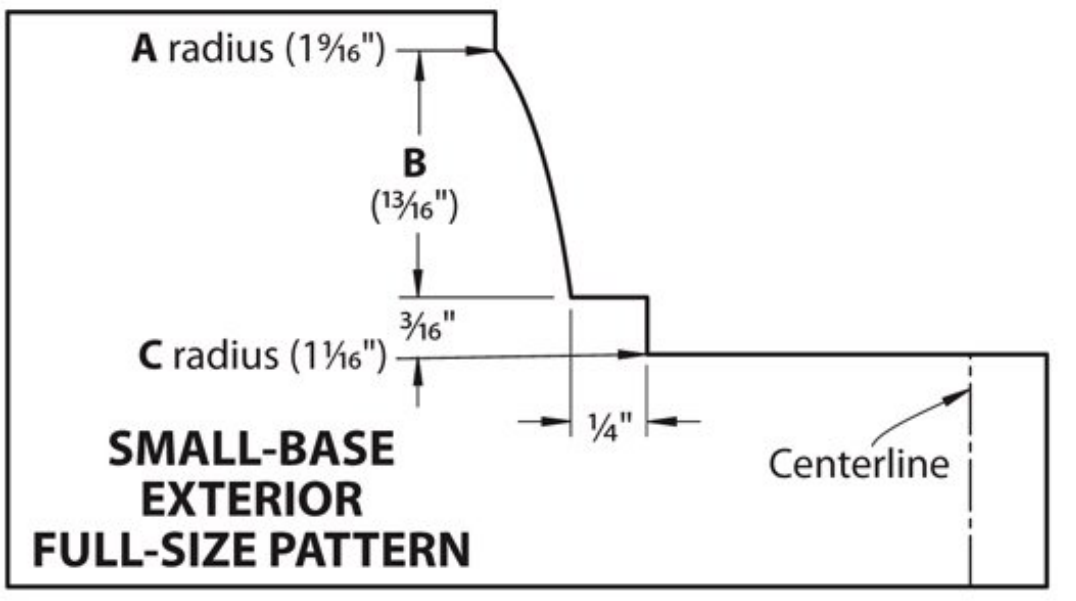












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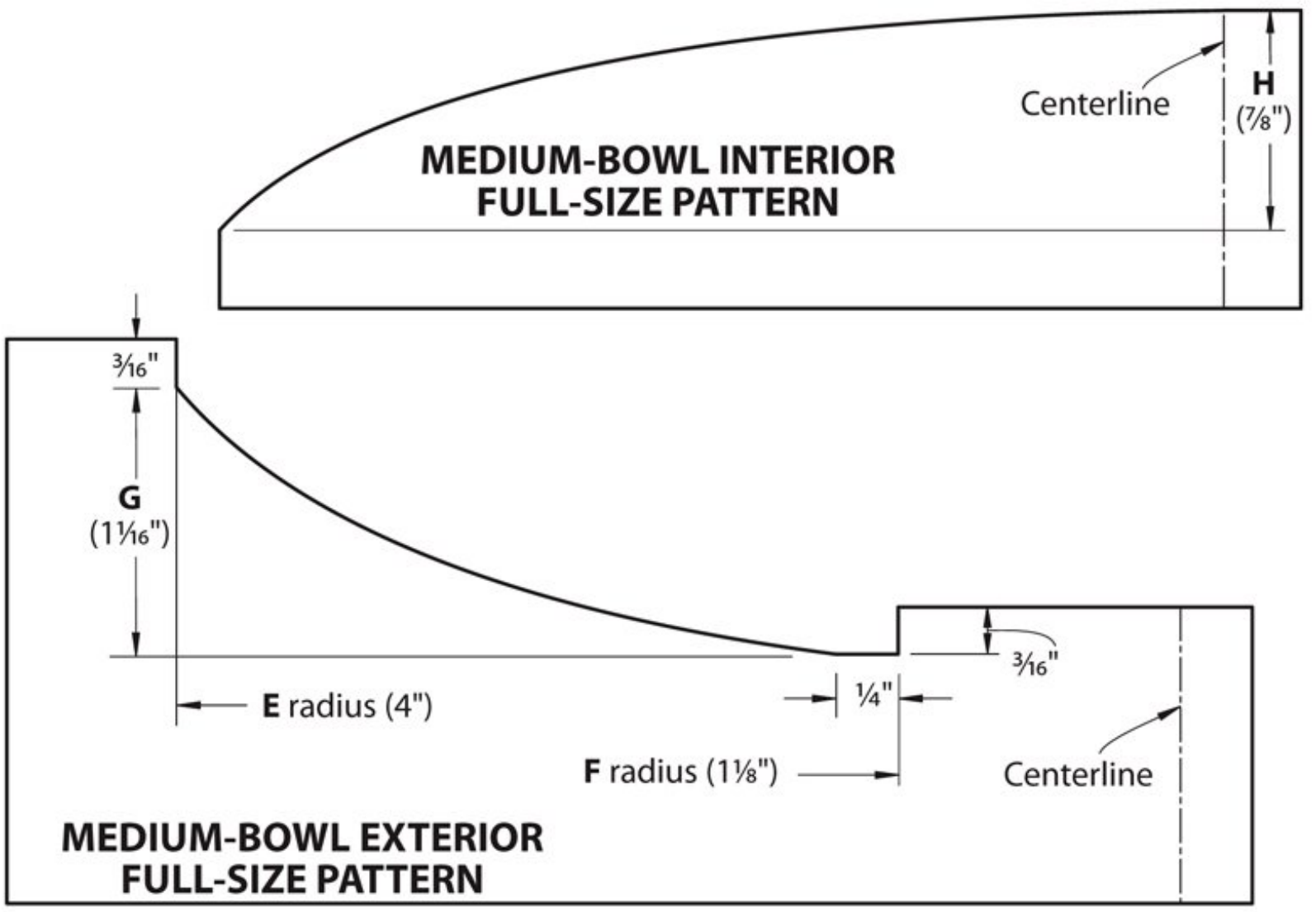
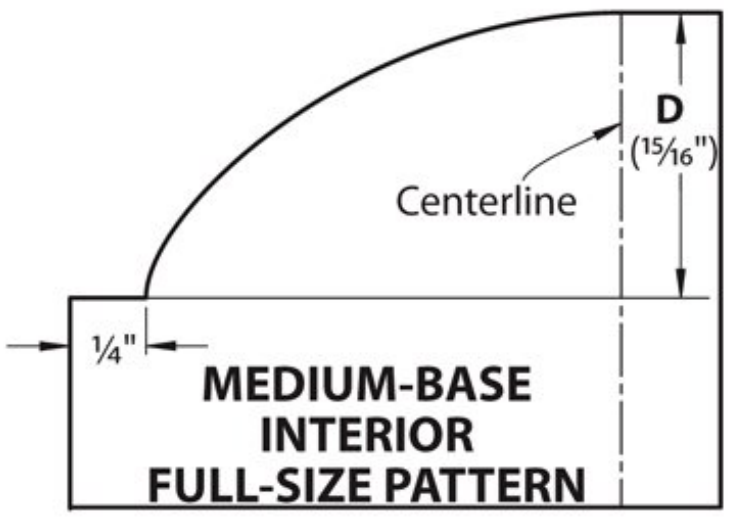
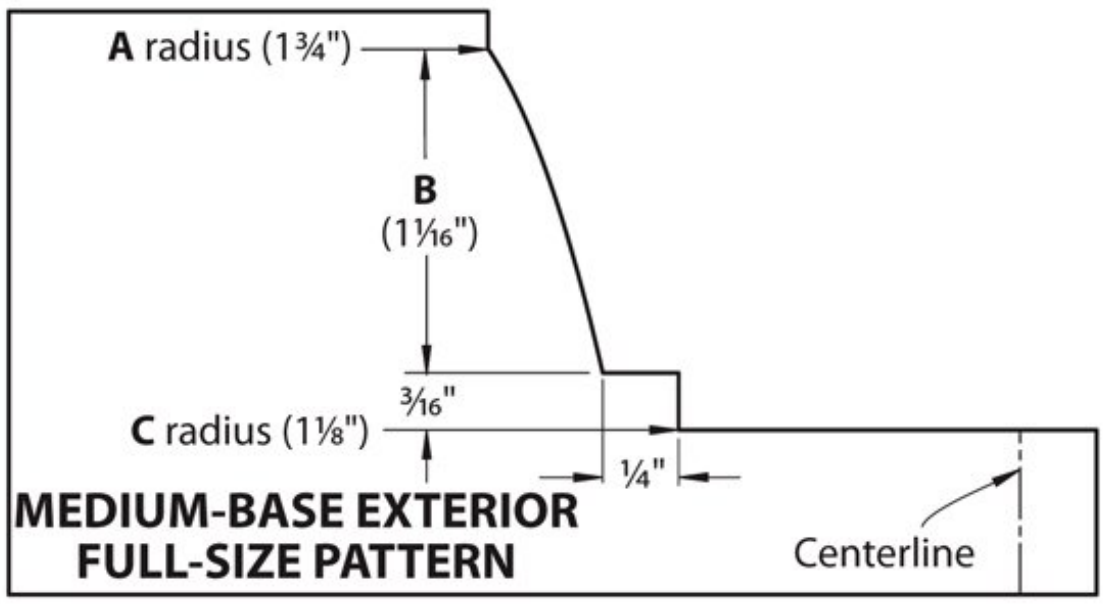
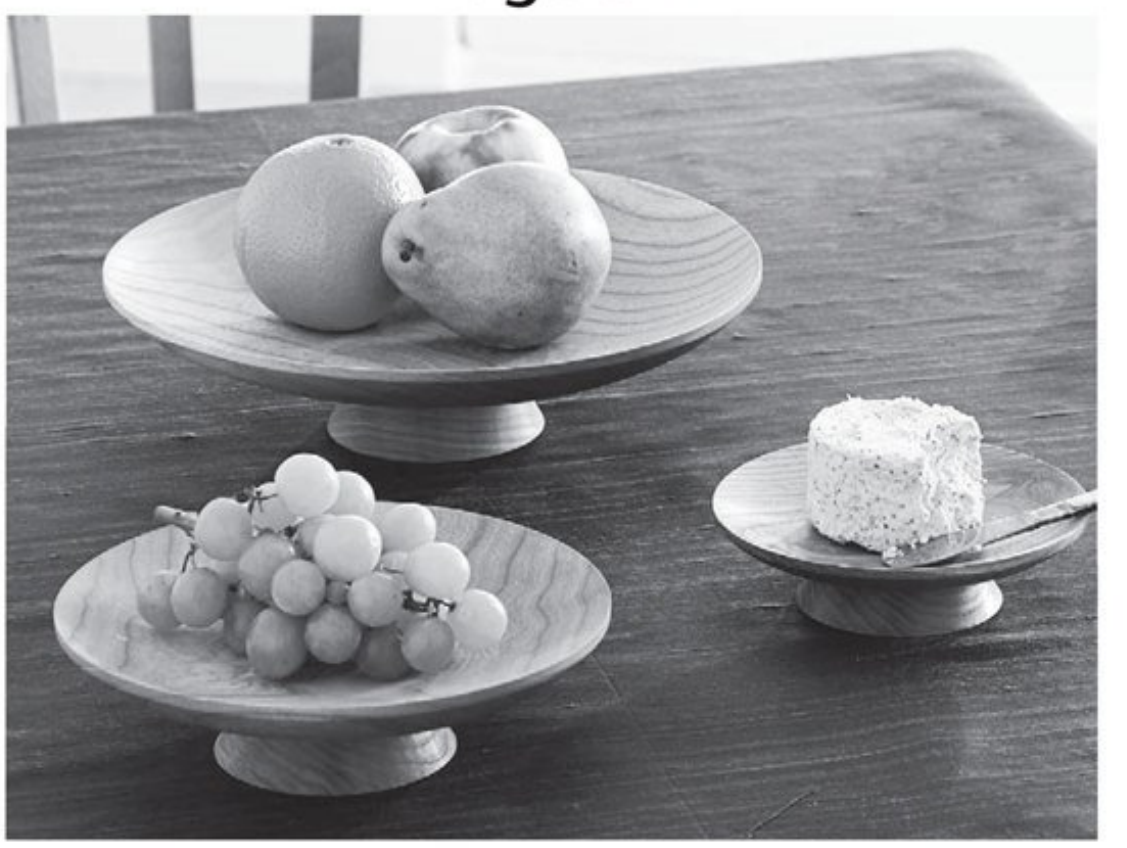






Three-piece Bowl Set
Page 34



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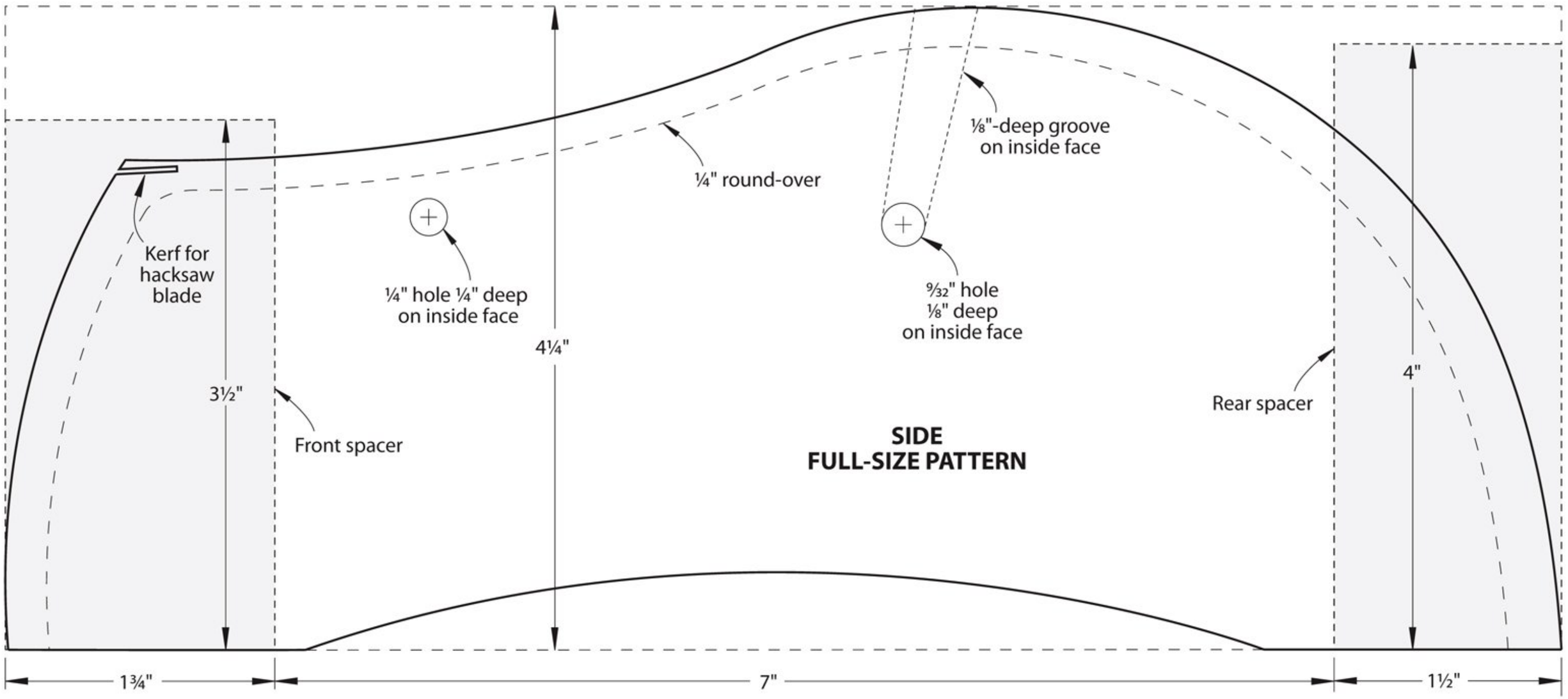
Tape Dispenser
Page 24



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When you need to cut dadoes, grooves, or rabbets, you want to do it cleanly and quickly. You can make these cuts with a tablesaw or router, but which proves best? Well, as you'll see, that depends on several factors.

The Dado Challenge

Kevin Boyle and Jeff Mertz—the guys who design and build most of the *WOOD*® magazine projects—were discussing options for cutting bookcase dadoes one day, and began debating which tool would be best: the tablesaw or router. Soon, more of our editors were drawn into the discussion, and we decided that only a showdown could settle the debate once and for all. So we gave Kevin and Jeff the same assignment, but on different machines. Kevin chose the tablesaw, Jeff the router, along with a self-squaring straightedge and a guide bushing. The contest: to see who could finish first—with accurate results, of course.

The ground rules: Each had to create a pair of 11×42" bookcase sides with three dadoes for ¾" shelves, a rabbet for a ¾" top, and a rabbet for a ¼" back on each piece. Nothing could be set up ahead of time, although the project parts and any jigs or auxiliary fences could be cut to size. Both chose to make all cuts in one larger panel, and then rip it in half for perfectly matching sides. Now, let's get ready to rumble...

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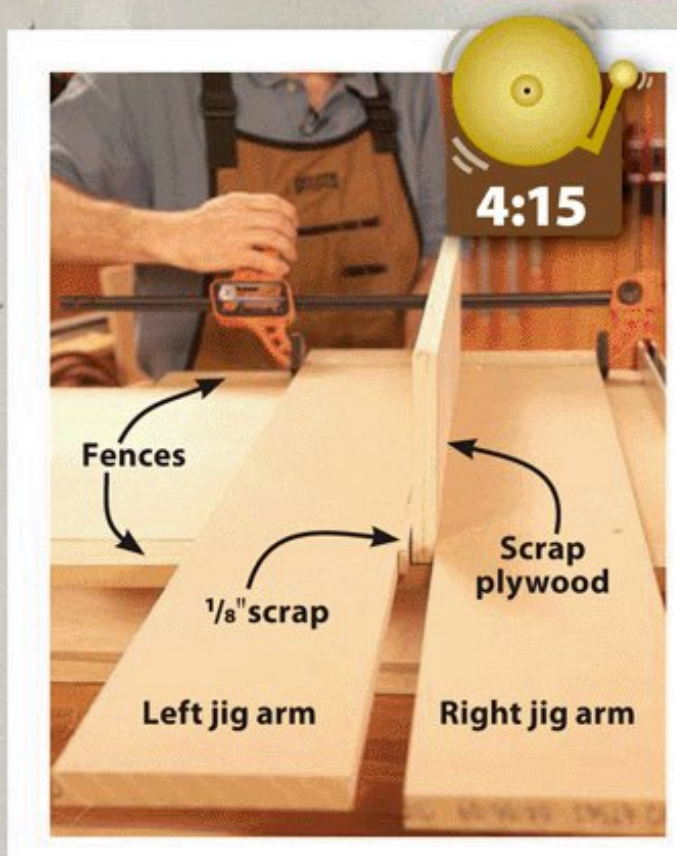
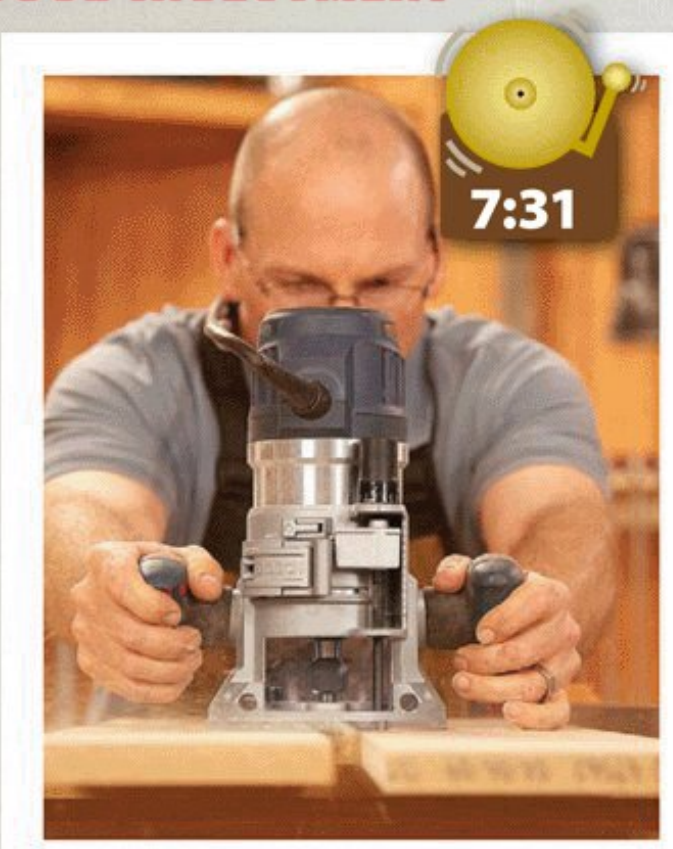
JEFF ROUTS HIS WAY TO CLEAN DADOES WITH A MODEST TOOL INVESTMENT

After installing a ⅝" guide bushing and ½" downcut spiral bit, Jeff sets the bit's cutting depth with a reliable combination square.

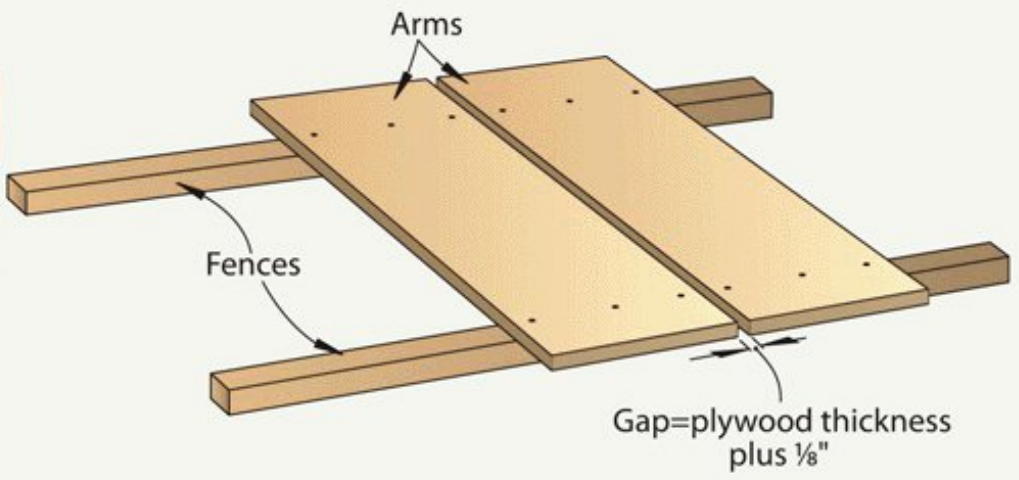


With the right jig arm screwed to the fences, Jeff clamps the left jig arm to it, spacing it with a piece of ¾" plywood and a strip of ⅛" scrap (to match the bit-and-bushing offset).



Jeff makes a test cut in a spare piece of plywood: routing one pass against the right jig arm and a second against the left to complete the dado.

Router Dado Jig



When the dust cleared, here's what we learned

Kevin and his tablesaw finished about a half a minute ahead of Jeff and his router. We stopped the clock when Kevin reinstalled the 10" general-purpose blade, ready for both woodworkers to rip their panels in half.

As a result of this showdown, we learned that with either a stacked dado set or a spiral (or straight) carbide router bit you can cut dadoes, grooves, and rabbets in about the same time. Each tool has its

KEVIN MAKES SHORT WORK OF HIS CUTS WITH A TABLESAW AND PREMIUM DADO SET

Kevin stacks the dado blades and chippers next to a scrap of shelf stock to get a close estimate on the right combination. (Place the blades gently on the tablesaw top to avoid damaging the carbide teeth.)

After installing the dado set and making a test cut, Kevin checks the fit. Dang, it's too wide! He measures the overcut by inserting shims; he'll remove the one (or ones) from his setup that fits tightly in the gap.

With an auxiliary fence clamped to the rip fence and set against the dado blades, Kevin makes his first cut, the ¾" top rabbet.

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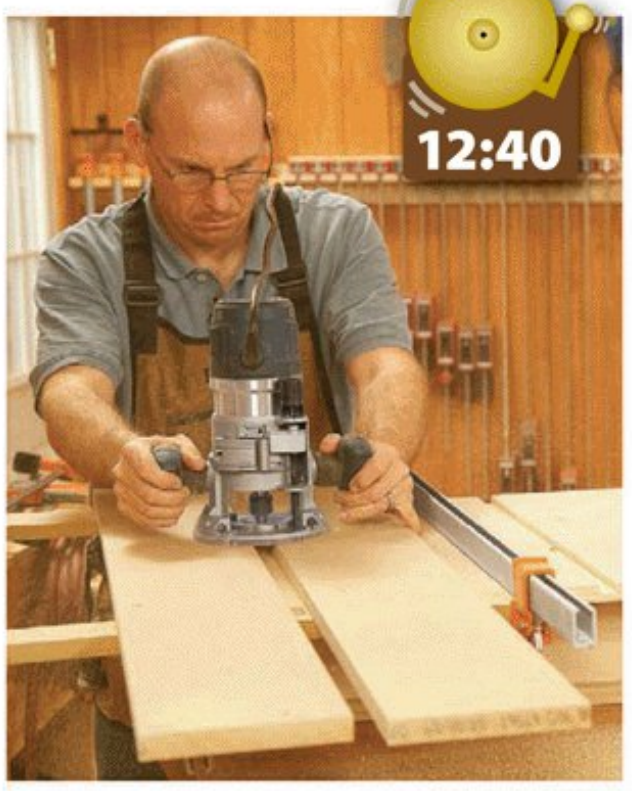


Jeff begins his third dado in the actual workpiece. (He cut the ¾" top rabbet earlier using the guide bushing and jig.)

After removing the guide bushing and installing the router's edge guide accessory, Jeff sets the bit's cutting depth for the ¼" back rabbet.

Jeff routs the first of the two ¼" back rabbets. Job completed at 19:44.

advantages. Once you have a tablesaw set up with a stacked dado blade, you can make multiple dadoes quickly by simply repositioning the rip fence. Go with the tablesaw for production-type time savings. But the router offers you the advantage of a lightweight tool that you move around the workpiece, saving you from repeated lifting and repositioning heavy panels. And one good downcut spiral bit (½" is a good first choice) works for multiple everyday tasks—mortises and inlays, for example.

There will be times, however, when your workpiece dictates the best method. For example, if you're building 6'-tall bookcase sides, go with the router. Maneuvering panels that size across a tablesaw will prove unwieldy and could result in inaccurate cuts.

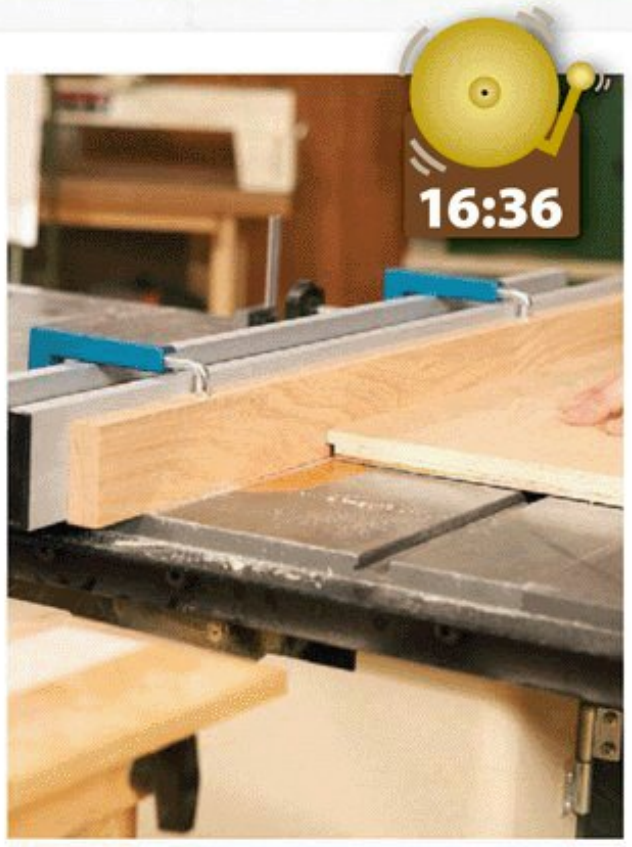
Our advice: Use the method that makes you the most comfortable and yields the best results. If you can't afford a premium dado set, or a tablesaw to power it, you can get super-clean cuts with an affordable router and a single router bit.

Watch the Dado Duel in real time for FREE at woodmagazine.com/dadoduel.

continued on page 52

After resetting the rip fence, Kevin cuts his first dado, second cut overall.

Because the stacked dado set and auxiliary fence nullify the fence scale, Kevin uses a measuring tape to set the rip fence to the correct position for the third dado.



After setting the auxiliary fence over the blade and making a relief cut—something he did not do for the first rabbet—Kevin makes his final cuts, the two back rabbets. Job completed at 19:16.

More help in choosing a tablesaw or router

In our Dado Duel we grabbed a stacked dado set and downcut spiral router bit—both sharp—from our shop, so we got clean, tear-out-free cuts. Use anything less, and your projects could suffer. Below are some cut samples to show you the kind of results you could expect to get, depending on the quality and sharpness of your blades and bits.

Stacked Dado Set Pointers

Price range: $75–$250

👍 By mixing outer blades, chippers, and shims—often a time-consuming process—you can cut any width from ¼" to 13⁄16", although some sets go up to nearly 1". (The length of your tablesaw's blade arbor could limit maximum widths.)

☞ Small, benchtop tablesaws with universal, direct-drive motors might struggle to power a wide dado setup. So opt for a 6"-diameter stacked dado set, which requires less power, for these saws.

👍 You can make a full-depth cut in one pass on most tablesaws. (Some benchtop saws struggle with channels wider than ½" and deeper than ¼".)

👍 Once you've set up the desired width, you can quickly cut multiple channels by simply repositioning your rip fence, miter gauge, or crosscut sled.

HIGH-QUALITY VS. LOW-QUALITY STACKED DADO PERFORMANCE

When sharp, better-quality sets (costing $150 and up) produce flat-bottom channels with no surface tear-out.

Dull or lesser-quality sets tend to tear out surface fibers and leave channel bottoms with ridges and scoring marks.

👍 Nearly all the dust and debris from these concealed cuts gets whisked away by the dust collector, or falls below the saw.

👍 If you need to cut beveled channels, it's much easier to tilt a stacked dado set than to make a jig for a router.

👎 We do not recommend cutting stopped dadoes, grooves, or rabbets with a tablesaw—workpieces can be damaged or kicked back at you with alarming force and speed.

👎 Steer clear of dado sets that come with paper shims that tear easily and others that don't include shims at all.

Freud 10-piece metal shim set: part # SS100, $12, amazon.com.

Straight or Spiral Router Bit Know-How

Price range: $10–$75 apiece, $40–$150 for sets

👍 It's easy to rout stopped dadoes, grooves, and rabbets, by either using stopblocks or by eyeballing a mark.

👎 Odd plywood sizes usually require you to make multiple passes with a smaller bit to cut a perfect-fitting channel.

👍 When used with a jig or fence preset to a desired width you can quickly rout multiple channels of equal size simply by repositioning the jig.

👎 Spiral bits, especially those made of solid carbide, can cost 2 to 4 times as much as straight bits, and prove more difficult to sharpen when dull.

☞ Set your router's speed control near the fastest setting—based on the diameter of your bit—for best results.

👎 When routing with a handheld router, dust and debris spew everywhere. Dust-collection shields and attachments can be effective, but can be cumbersome with a vacuum hose attached.

👍 When routing with dust-collection shields in place and hooked to a shop vacuum, nearly all dust gets sucked up so you don't have to breathe it.

HIGH-QUALITY VS. LOW-QUALITY STRAIGHT BIT PERFORMANCE

Sharp, premium bits produce clean, tear-out-free channels with flat bottoms and square shoulders.

Lesser-quality bits—sometimes right out of the box—produce fuzzing rather than cleanly shearing surface fibers.

DOWNCUT OR UPCUT SPIRAL BIT? THEY BOTH HAVE ADVANTAGES

A sharp downcut bit—the preferred choice for routing dadoes and grooves—produces clean, tear-out-free channels, but doesn't clear debris as well as upcut bits.

Upcut spiral bits quickly remove chips from a channel, preventing heat buildup and dulling. But upcut bits tend to lift surface fibers, so reserve them for routing mortises.

Written by **Bob Hunter** with **Jeff Mertz** and **Kevin Boyle**

Photos by **Dean Schoeppner** and **David Purdy**

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325 Easy-to-Build Projects

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- Quickly find exactly the project you're looking for, then build it in a weekend, guaranteed!
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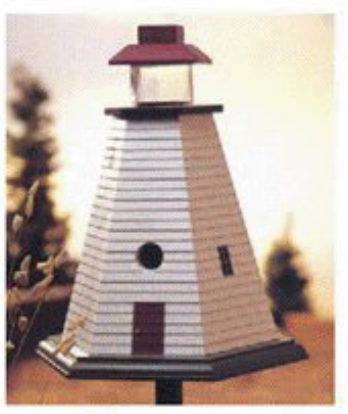
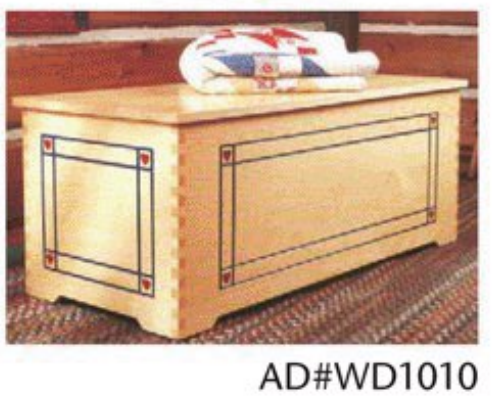
- All projects were built and proven in the *WOOD* Magazine workshop, though you've never seen them in the pages of *WOOD*. That's because *Weekend Woodworking Projects* was a sister publication to *WOOD* Magazine that enjoyed a 9-year run catering to the needs of woodworkers looking for beautiful projects they could build with a minimal investment in time, tools, and materials. Back issues of *Weekend Woodworking Projects* are nearly impossible to find anywhere, but this disc makes all of these projects available to you once again—at a price of less than $1 per issue!



See more of the projects on this disc and order your own copy at
woodmagazine.com/WeekendCD Or order by phone: 888-636-4478



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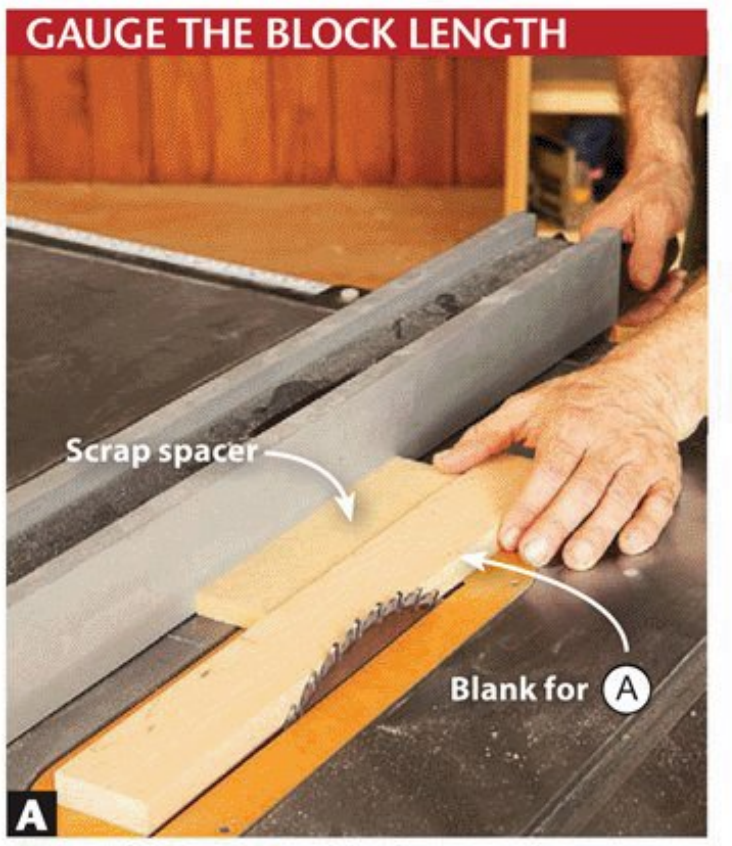
Elegant and easy Candleholders

This made-in-a-weekend gift will brighten the day of the recipient, but you get something out of it, too: a use for those small scraps too good to throw out. In our stash of cutoffs, we found maple and wenge.

Make the blocks

1 For the blocks (A) [**Drawing 1**], prepare a ⅝×1⅞×15" maple blank. To safely cut blocks from the blank, place a 2"-wide scrap against the tablesaw's rip fence, and place the block blank between the scrap and the blade [**Photo A**]. Slide the rip fence over until the blank just touches the teeth (not the body) of the blade and lock the fence in place. Using double-faced tape, stick the scrap to the saw table in *front* of the blade [**Photo B**]. Attach an extension to your miter gauge.



Cut perfectly square blocks (A) without measuring by using the blank as a gauge when setting the rip fence and spacer.

Butt the end of the blank against the scrap, then crosscut six blocks (A) from the blank.

2 Set up a ¼" dado blade in your tablesaw, ¼" above the table. With the rip fence 13⁄16" from the blade, cut four grooves in each block (A) [**Photo C**].

3 Chuck a ⅞" Forstner bit in your drill press. On three blocks (A) draw diagonal lines from corner to corner. Clamp one of the marked blocks in a wood handscrew, center the block under the bit, and clamp the handscrew to the drill-press table. Drill a ½"-deep counterbore. Repeat this for the other two marked blocks. Sand the blocks to 220 grit, slightly rounding the top edge of each counterbore so the lip of the brass ferrule seats against the block [**Drawing 1**]. Test the fit of the ferrules, then remove them.

Shape the legs

1 Cut ¼"-thick stock to size for each leg (B, C, D) [**Materials List**]. Make a copy of the **Short**, **Medium,** and **Tall Leg Patterns** from the *WOOD Patterns®* insert. Stack like-size leg blanks together with double-faced tape between each piece. Spray-adhere a pattern to the top of each stack and bandsaw or scrollsaw the legs to within 1⁄16" of the lines. Sand up to the lines with a sanding drum; then remove the patterns with a bit of mineral spirits. Carefully separate the legs, and sand them to 220 grit.

2 Scrapwood spacer blocks simplify assembling the candleholders. From a ½×2×16" blank, cut six spacers: two ½" long, two 2½" long, and two 4½" long.

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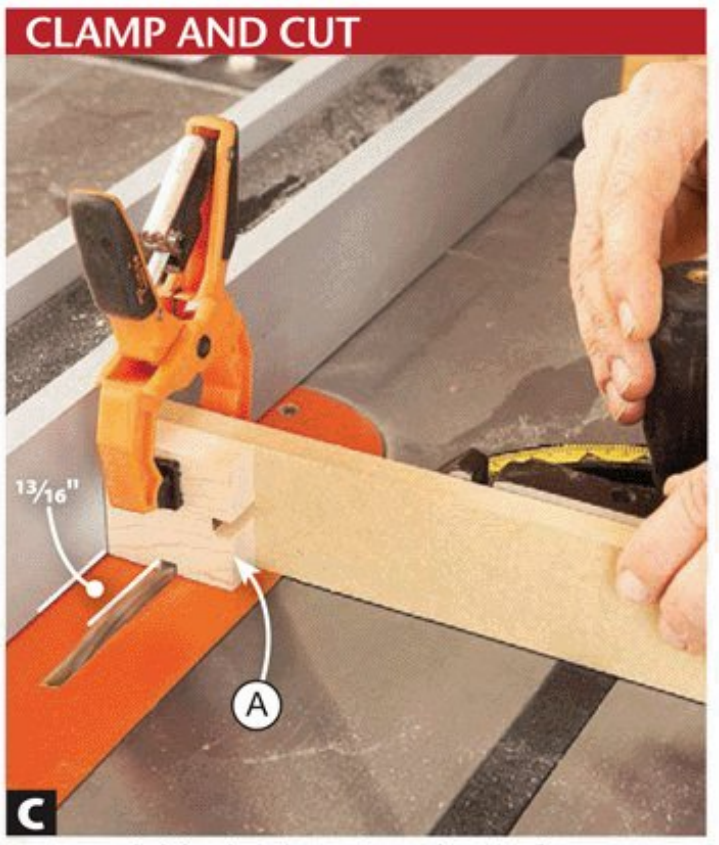
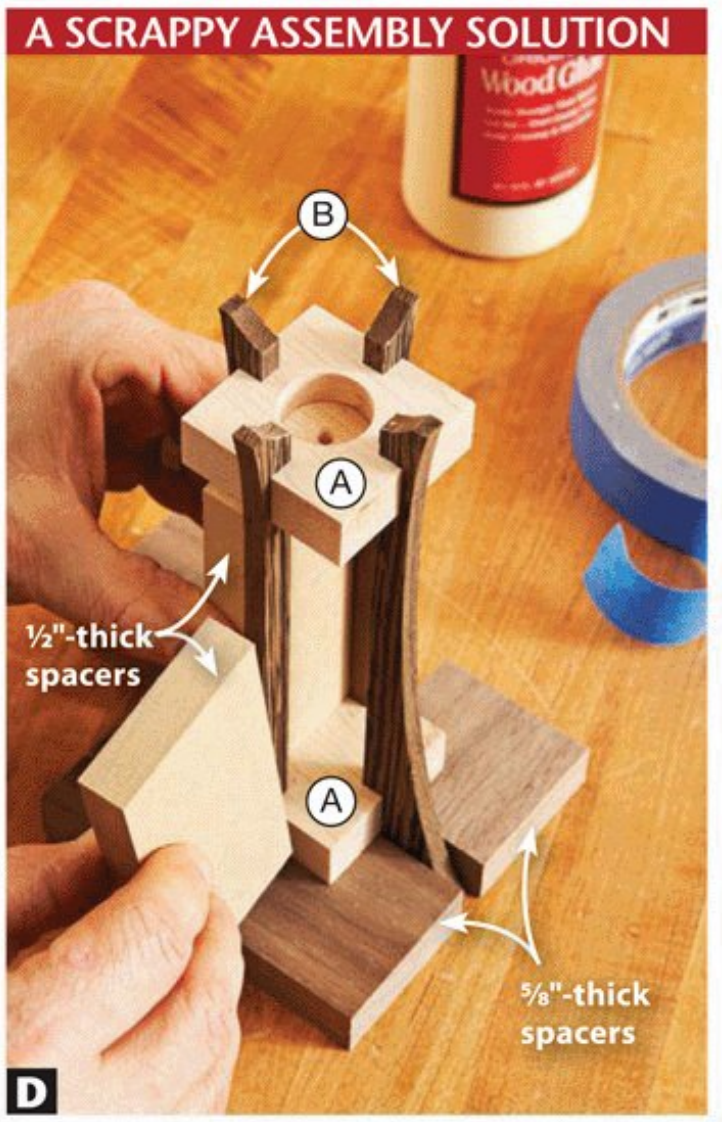
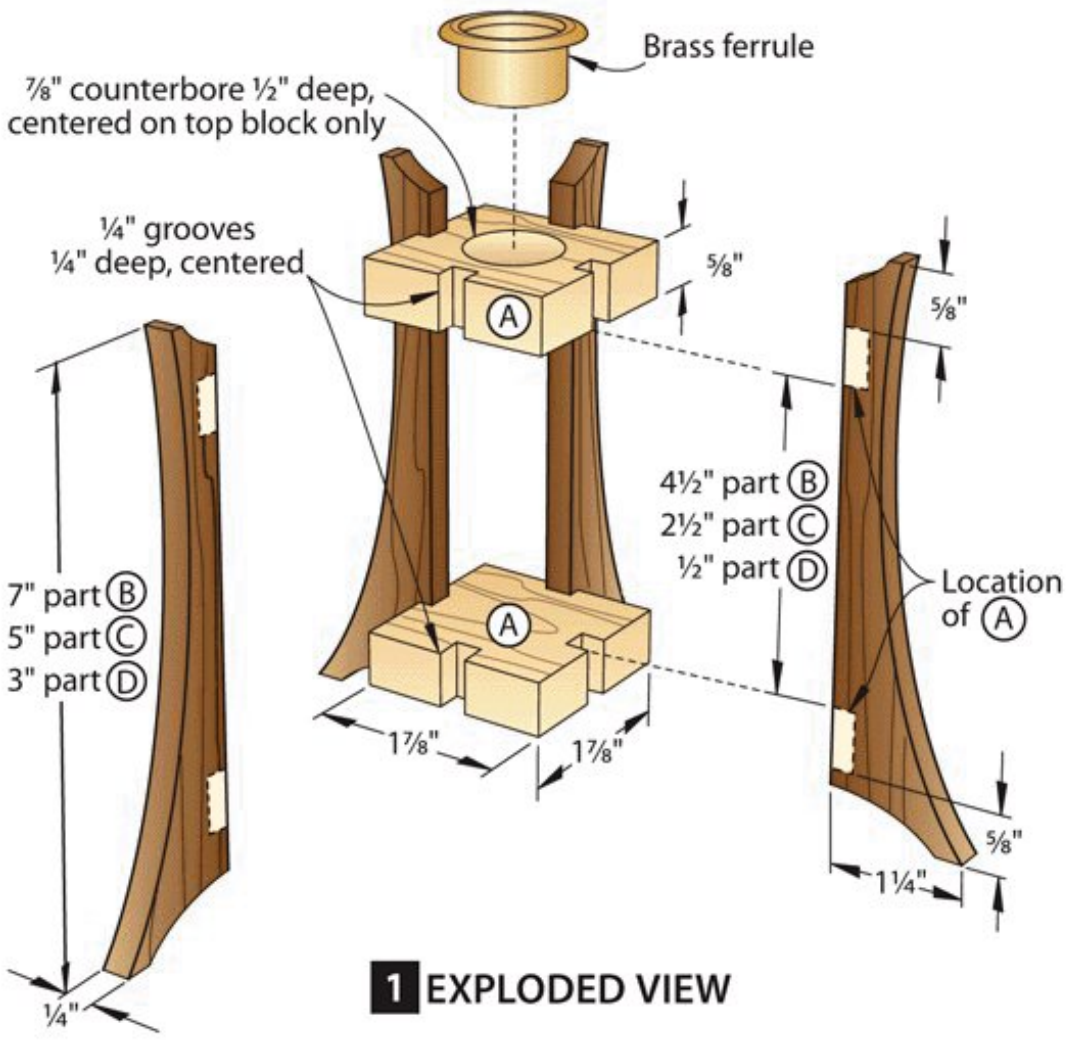
Because of the open area between the blade and fence created by the spacer, the blocks (A) fall away from the blade after being cut.



Butt each block (A) against the rip fence and clamp it to the miter-gauge extension. Notch each end and edge of each block.



Spacers below the lower block (A) set it at the proper height. Spacers between the legs (B) position the upper block. Clamp with tape.



1 EXPLODED VIEW

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
*A	blocks	⅝"	1⅞"	1⅞"	M	6
B	tall legs	¼"	1¼"	7"	W	4
C	medium legs	¼"	1¼"	5"	W	4
D	short legs	¼"	1¼"	3"	W	4

*Parts cut from larger blank. See the instructions.

Materials key: M–maple, W–wenge.
Supplies: Spray adhesive.
Blade and bit: Stack dado set, ⅞" Forstner bit.

Source: Brass ferrules (3) no. 21766, $0.59, Rockler, 800-279-4441, rockler.com.

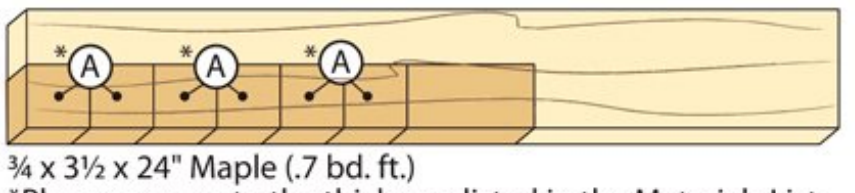
Produced by **Craig Ruegsegger** with **Jeff Mertz**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**

From a second blank, cut twelve ⅝×2×2" spacers. With four ⅝"-thick spacers under an undrilled block (A) [**Photo D**] put a dot of glue in each notch and press the legs in place. Glue the top block in place, then slide two ½"-thick spacers between the legs and blocks.

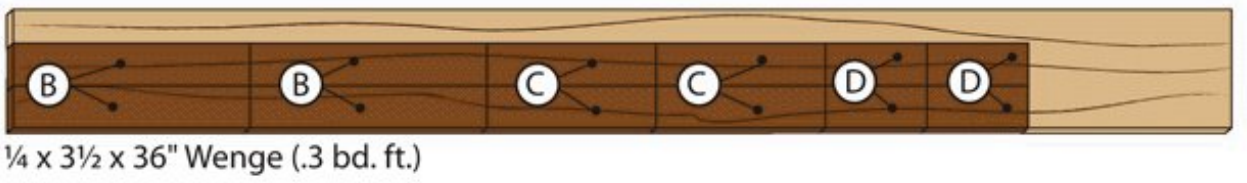
Quick Tip! Cheap and effective tape clamps. Wrap the assembly with painter's tape and let the glue dry.

3 Remove the spacers and apply finish to each candleholder. (We sprayed on three coats of aerosol lacquer, sanding lightly between coats with 320-grit sandpaper.) Press the brass ferrules into the top blocks (no adhesive needed). Now brighten your next celebration with these beautiful candleholders.

Cutting Diagram



¾ x 3½ x 24" Maple (.7 bd. ft.)
*Plane or resaw to the thickness listed in the Materials List.



¼ x 3½ x 36" Wenge (.3 bd. ft.)

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SHOP TESTED

Do-It-All Routers

Can a single machine handle every router chore in your shop? We test 9 of 'em to find out.

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We'd all love to have a fleet of routers at our disposal, but few of us can afford that luxury. So we went on a quest for the ultimate router: one machine that does it all. After compiling a list of what's required for a do-everything router, shown at *right*, we rounded up every router that meets those criteria—three dedicated plunge routers and six multibase kits—and put them through extensive testing. Here's how each router scored from 0 to 5 in each of the six requirements.

1. Power

To compare the routers, we challenged each of them in these shop tasks using new Freud bits in red oak:

- ½"-wide plunge mortises 1½" deep;
- three full-depth profiles (two different cove-and-bead bits and a profile-and-groove bit from a rail-and-stile set) and a 7/16"×½" rabbet with brisk hand-fed rates;
- and using a 3½"-diameter raised-panel bit in a router table.

All the routers impressed us by plowing through the handheld tasks without bogging down, even when we fed them faster than we normally would. Next stop: the router table, where we divided the 1½"-wide raised-panel profile into three equal passes. Once again, all the routers handled the 10-feet-per-minute feed rate.

So we upped the ante for the next round, cutting the profile in two equal passes. This time, only the Bosch MRC23EVS, Freud FT3000VCE, and Triton TRA001—all with test-topping 15-amp motors—could do it without bogging down.

Power scorecard (0–5)

Bosch MRC23EVS	5
Freud FT3000VCE	5
Triton TRA001	5
Milwaukee 5616-24	4
Triton MOF001C	4
Bosch 1617EVSPK	3½
Craftsman 28084	3½
Porter-Cable 895PK	3½
Ridgid R29302	3

2. Speed

Slow speeds work better for big bits, and most routers' low speeds bottom out at 8,000 or 10,000 rpm. But Craftsman's lowest speed was 12,000 rpm. Although it did not create a problem in our tests, we still prefer slower speeds when routing woods prone to burning or tear-out.

Porter-Cable and Ridgid earn kudos for showing actual rpm markings on their variable-speed dials. Almost as handy, the Craftsman, Freud, and Milwaukee routers have a speed chart on the motor housing, shown at *right*, that corresponds to numbers on the speed dial. We had to refer to the owner's manual to decipher the numbered speed markings on the remaining routers.

Once you dial in the correct speed, it's vital that the router maintain that speed during the cut. Using a phototachometer, we evaluated each model's ability to do that while routing raised panels. None dropped more than 1,500 rpm, with all but one varying only a few hundred rpm once into the cut. The Ridgid wowed us by never varying more than 35 rpm once it got into the cut. Impressive, considering its 11-amp motor ranks smallest in the test.

However, the Ridgid consistently pulled 12 to 19 amps during those cuts, causing it to warm up an average of 3° with each pass. Operating at these levels over time could shorten the life of this router. By comparison, the Bosch MRC23EVS, rated at 15 amps, drew only 9 to 13 amps to make those same cuts with half the temperature gain.

6 requirements of a do-it-all router

1. Ample **power** to run any bit, even the largest panel-raisers.

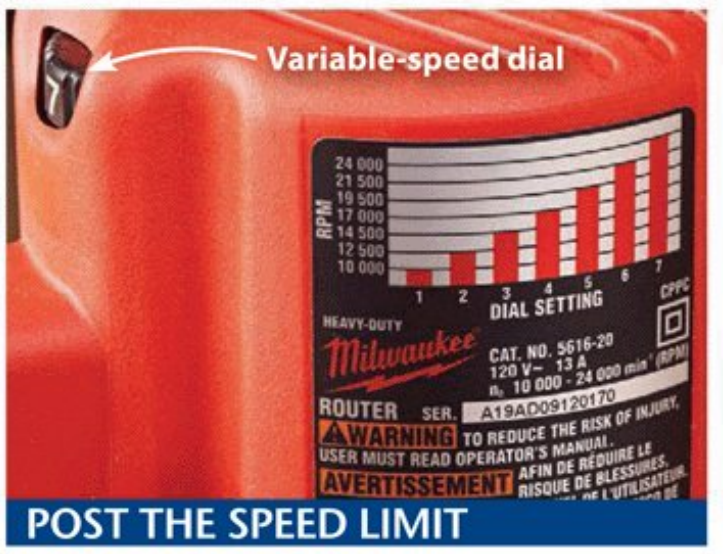
2. A variable-speed motor with soft-start and electronic feedback for maintaining **speed** under load.

3. Good balance and features for handheld **fixed-depth routing**.

4. Smooth, easy-to-use **plunge action** and features.

5. Through-the-base bit-height adjustability for **router-table use**.

6. Helpful included **accessories**: edge guide, dust-collection attachments, multiple subbases with different-size openings, guide-bushing holder or adapter, subbase centering cone, and a carrying case or bag for storage.



With the Milwaukee, you determine the best speed for your bit and then set the speed dial as indicated on its chart.

Speed scorecard

Ridgid R29302	5
Triton TRA001	5
Freud FT3000VCE	4
Milwaukee 5616-24	4
Triton MOF001C	4
Bosch MRC23EVS	3
Craftsman 28084	3
Bosch 1617EVSPK	2½
Porter-Cable 895PK	2½

Bosch 1617EVSPK, $220
877-267-2499, boschtools.com

Bosch MRC23EVS, $325
877-267-2499, boschtools.com

Craftsman 28084, $220
800-383-4814, craftsman.com

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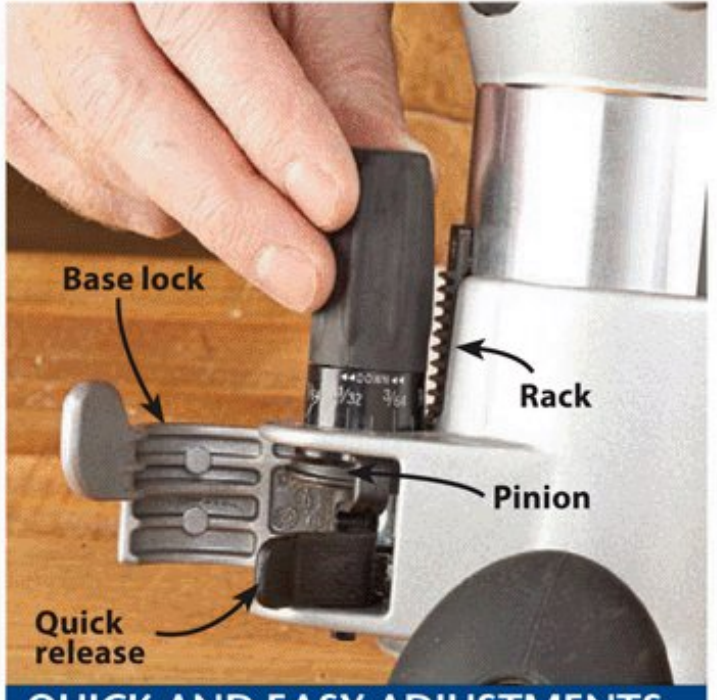
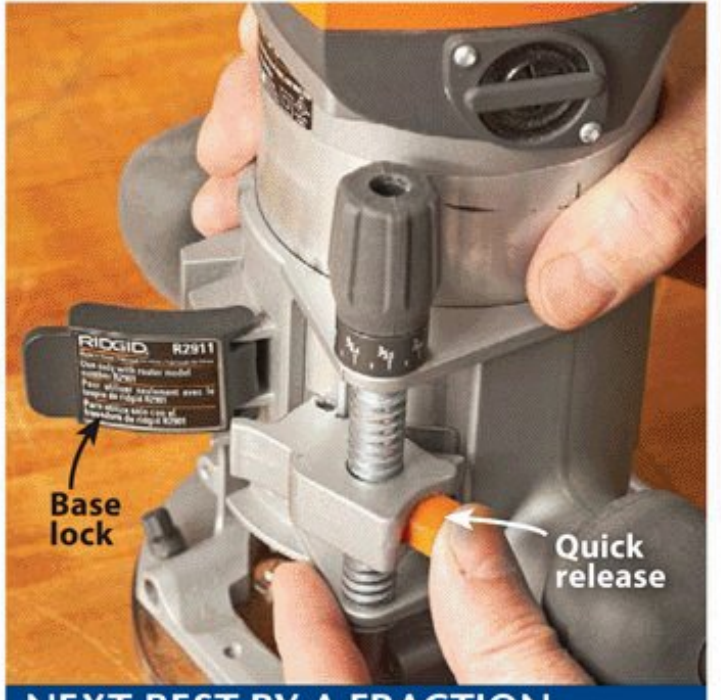


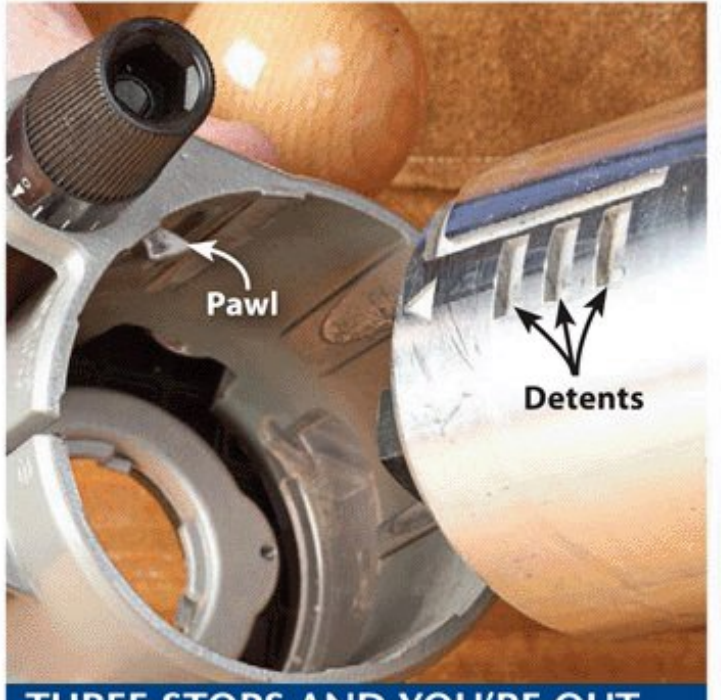
QUICK AND EASY ADJUSTMENTS

You push Porter-Cable's quick-release lever to reposition its pinion gear anywhere on the rack and still get the full range of adjustment.



NEXT-BEST BY A FRACTION

Coarse threads on the Ridgid adjuster make for rapid movement up and down, and the quick release lets you slide even faster.



THREE STOPS AND YOU'RE OUT

You'll get more adjustment range from the bottom detent, shown on the Bosch 1617EVSPK, than with the other two.

3. Fixed-depth routing

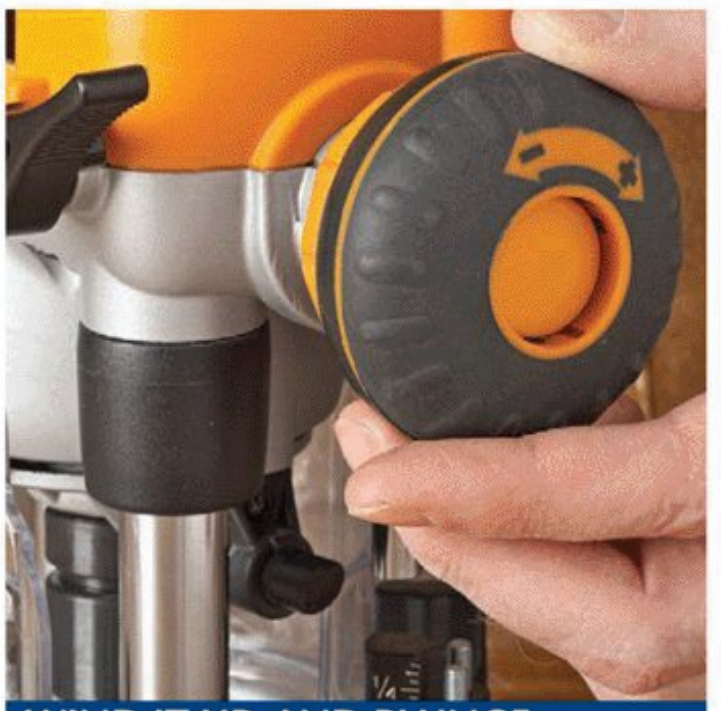
Big or small, fixed base or plunge, you'll appreciate a router that adjusts up and down quickly for fixed-depth routing. Among the fixed bases in the kits, we prefer Porter-Cable's rack-and-pinion adjuster, shown *top left*, best because it has a quick release for coarse adjustments and a fine-adjustment knob that's easy to use. Milwaukee and Ridgid, shown *top center*, also have quick-release mechanisms that proved effective.

Fixed bases on both Bosch models, as shown *top right*, and the Craftsman engage one of three detents on the motor body. You then get a limited amount of up-and-down movement before you must switch to another detent. If you select the wrong detent and run out of fine-adjustment range, you'll have to move to the next detent and then thread the rod all the way to the other end.

The Triton plungers have a rack-and-pinion coarse adjuster—a dual-mode handle, shown *near right*—for controlling fixed-depth adjustments as well as plunge action. We found this feature clumsy and difficult to use.

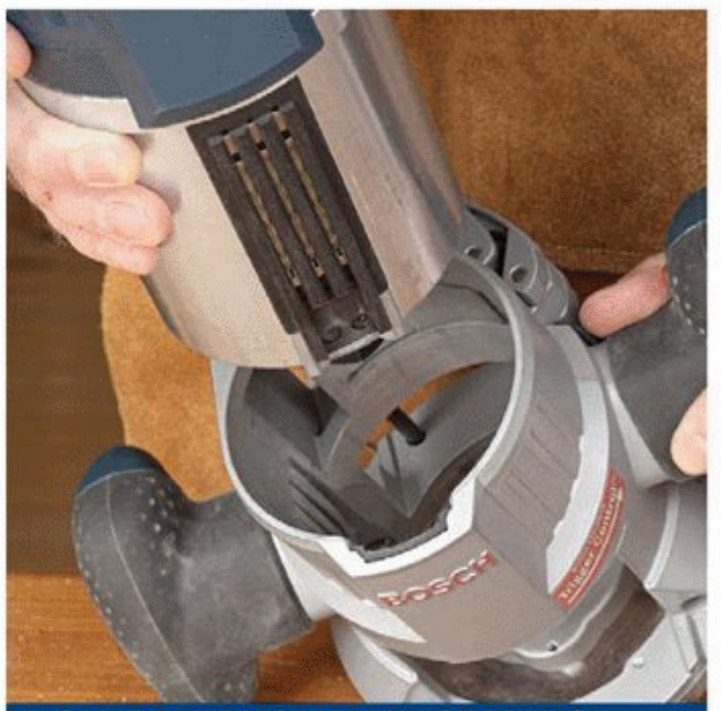
Ease of handling proves as important as being able to quickly adjust the bit depth. The two beefy 3-hp plunge routers—Freud and Triton's TRA001—weigh 13 to 14 lbs and prove bulky, top-heavy, and more tippy than the others, especially when routing along edges and corners. The Bosch MRC23EVS, in either base, weighs about 2 lbs more than the other 8½–11 lb kit routers, but its lower center of gravity makes it less cumbersome than the big plunge routers.

And this Bosch has another advantage on its fixed base: a handle-mounted power switch. With other kit routers you have to remove or adjust your grip on one handle to turn it on or off. The Bosch MRC23EVS, *above right*, has a trigger just like the three dedicated plunge routers; it's easy to engage without changing your grip.



WIND IT UP, AND PLUNGE

Push the Tritons' center button in the handle for plunge action. Release it to engage the rack-and-pinion height-adjustment system.



POWER AT YOUR FINGERTIPS

Contact strips on the Bosch motor body and each base supply power to the handle switches for easier on/off control.

Fixed-routing scorecard

Porter-Cable 895PK	4½
Bosch MRC23EVS	3½
Milwaukee 5616-24	3½
Ridgid R29302	3½
Craftsman 28084	3
Triton MOF001C	2½
Triton TRA001	2½
Bosch 1617EVSPK	2
Freud FT3000VCE	2

Freud FT3000VCE, $350
800-334-4107, freudtools.com

Milwaukee 5616-24, $240
800-729-3878, milwaukeetool.com

Porter-Cable 895PK, $260
888-848-5175, deltaportercable.com

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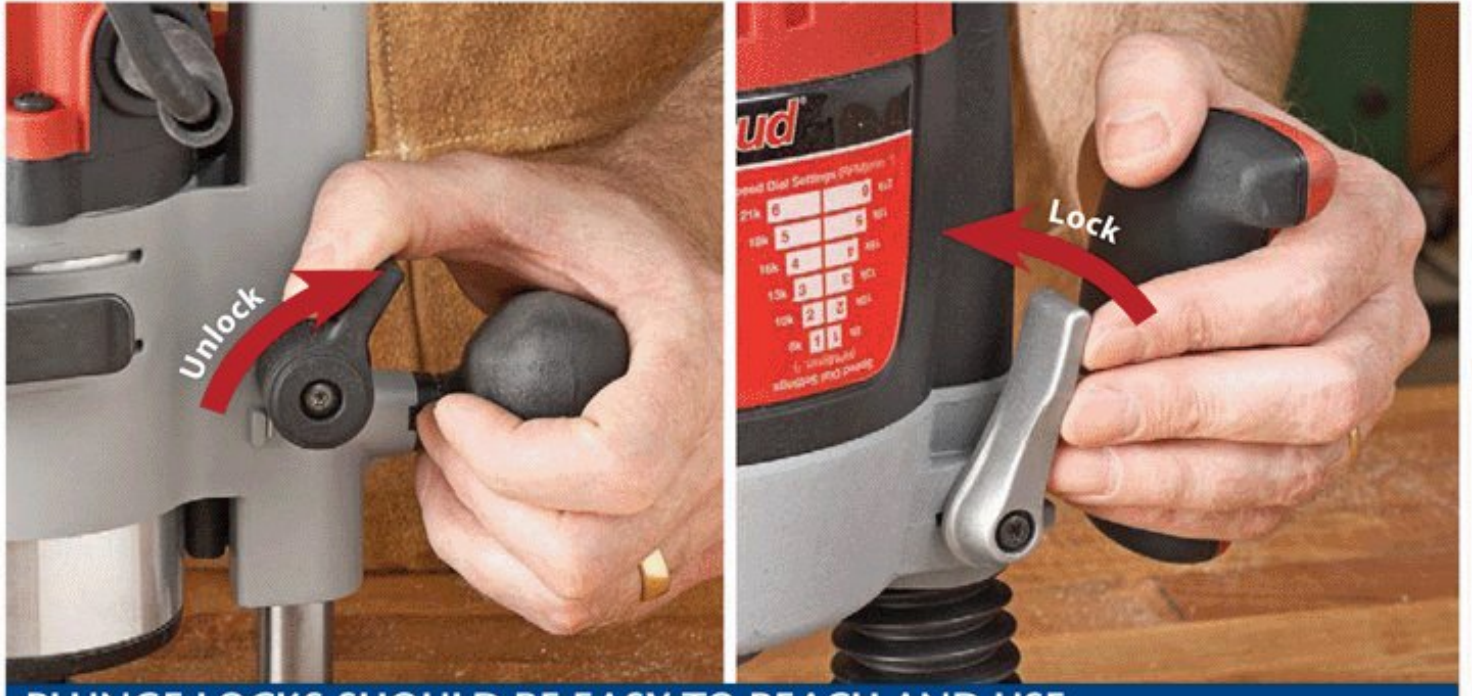

PLUNGE LOCKS SHOULD BE EASY TO REACH AND USE

The best plunge locks can be easily reached from the handle and depressed to unlock, as on the Milwaukee.

With some routers, such as the Freud, you must loosen much of your grip from the handle to secure the plunge lock.

4. Plunge action

We prefer models that plunge smoothly without side-to-side play and with plunge locks easy to reach without also changing your grip on the handles. We like locks that you depress to plunge and return to locked when released, such as on the Bosches, Craftsman, and Milwaukee, shown *above left*. Freud (*above right*), Porter-Cable, and both Tritons stay in plunge mode, locking only when you push the lever. The Ridgid's lever is not spring-loaded, so you have to change your grip slightly to engage it.

We tested each router's ability to plunge multiple holes of equal depth, and only the Milwaukee's stop-rod slipped in its lock: 1/16" over 25 holes. We liked the depth scale best on the Freud because it's easy to read and has coarse and fine adjusters. Triton's routers have no depth scale, so you have to measure plunge depths by other means. A micro-adjuster on the Bosch MRC23EVS lets you tweak a depth setting even after cinching the lock, a helpful feature.

Plunge-action scorecard

Bosch MRC23EVS	5
Freud FT3000VCE	4
Bosch 1617EVSPK	3½
Craftsman 28084	3½
Porter-Cable 895PK	3½
Ridgid R29302	3½
Milwaukee 5616-24	2½
Triton MOF001C	1
Triton TRA001	1

5. Router-table use

Switching any of the three dedicated plunge routers in our test from handheld use to the router table and back typically requires more work than with the multibase kits. For kits, you can attach the fixed base permanently to the table and simply swap the motor into the plunge base for handheld work.

When installing any of the routers in a table or to an insert plate, you want the access hole for the height-adjustment tool closer to the front of the table where the fence won't cover it. But sometimes an upfront height-adjustment access hole dictates that other router controls, such as the variable-speed dial, power switch, or base lock, be located toward the back of the table where it can be difficult to see or operate. The Bosch 1617EVSPK, Milwaukee, and Ridgid have the best table-mounting geometry for access to all features.

Although all the routers have through-the-table elevation capability —effectively, a built-in router lift— three perform this function better than others. Only the Freud and both Tritons let you easily change bits above the table, thanks to integrated spindle locks. These engage and lock the spindle, letting you loosen the collet nut with one wrench above the table.

To change bits with the kit routers, you have to either lift the router and insert out of the table or remove the motor from the base. To change bit height in the fixed bases, you have to unlock the base before making changes; this requires reaching below the table. With the dedicated plunge routers and Craftsman's plunge base, you simply insert the adjustment tool through the table and turn. Triton's adjustment tool, at *right*, worked quickest at raising and lowering bits because its handle swivels

CRANK IT UP—OR DOWN

Triton's plunge routers have the best height-adjustment tool, a swiveling crank that lets you make changes quickly.

Ridgid R29302, $200
866-539-1710, ridgid.com

Triton MOF001C, $200
800-624-2027, tritontools.com

Triton TRA001, $270
800-624-2027, tritontools.com

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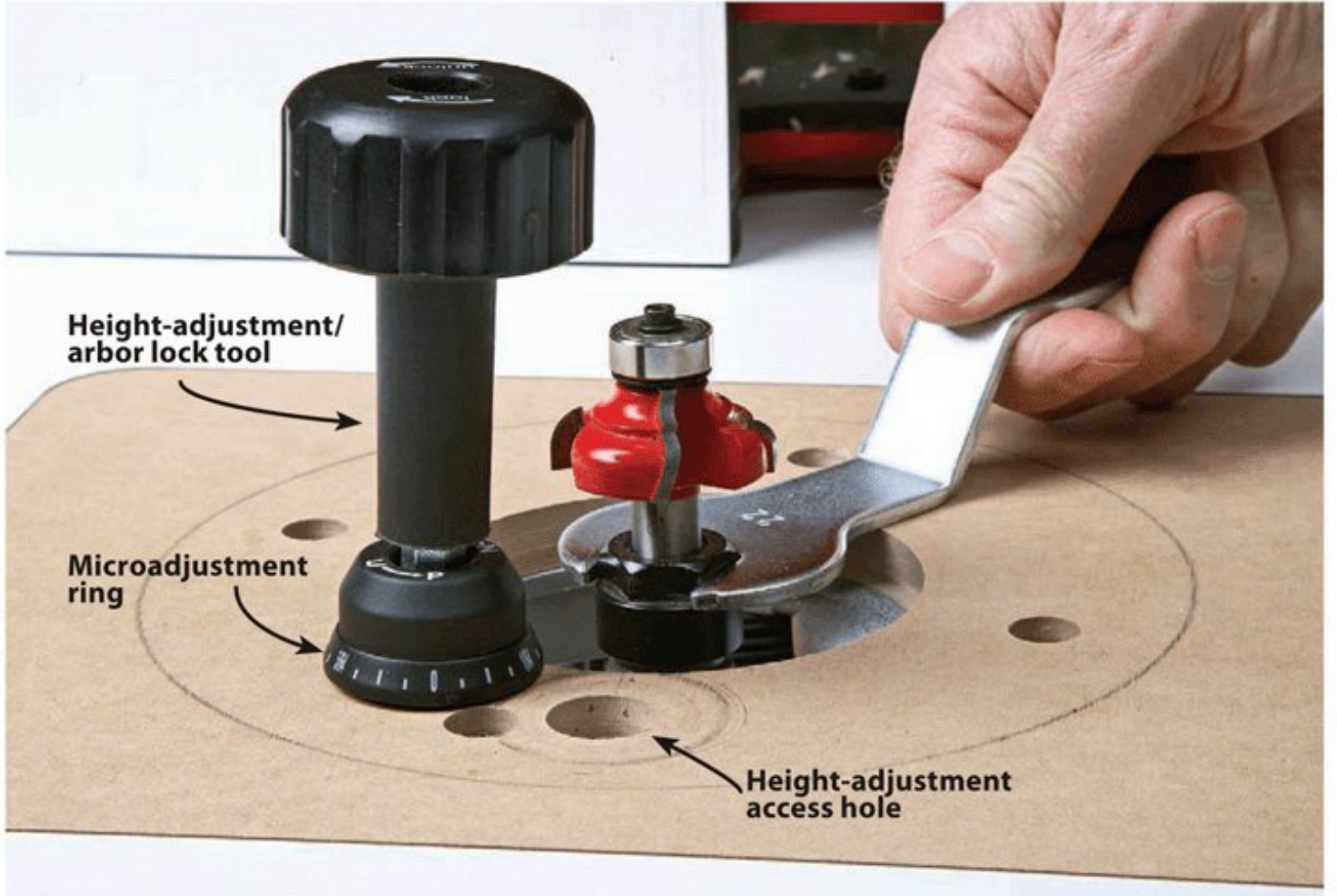
on an easy-to-use crank. Freud's palm-grip knob, at *right*, and fine-thread adjustment rod requires wrist-fatiguing partial-turns. For an easy way to get better use from a common T- or L-shaped hex wrench used by most routers, see the **Shop Tip** on *page 11*.

Table-routing scorecard

Bosch MRC23EVS	4½
Freud FT3000VCE	4½
Triton TRA001	4½
Milwaukee 5616-24	4
Porter-Cable 895PK	4
Bosch 1617EVSPK	3½
Ridgid R29302	3
Triton MOF001C	3
Craftsman 28084	2



ABOVE-THE-TABLE BIT CHANGES AND ADJUSTMENTS ARE BEST
With Freud's router table-mounted, you raise the collet nut fully and then lock the spindle with the same height-adjustment tool for easy one-wrench bit changes.

Where to put your money

If you can buy only one router, make it a multibase kit. The powerful Bosch MRC23EVS proved to be a versatile, feature-packed router kit with lots of accessories, topping our six-category showdown and earning Top Tool honors.

If Bosch's $325 price tag keeps you at bay, consider the Ridgid R29302, a *WOOD*® magazine Top Value, for $200. Despite its motor being rated at only 11 amps, this router kit stunned us with its steady power, even during tough, continuous tasks.

Final scores:

Bosch MRC23EVS	25½
Porter-Cable 895PK	22½
Ridgid R29302	22½
Milwaukee 5616-24	21½
Freud FT3000VCE	21
Triton TRC001	21
Craftsman 28084	19
Triton MOF001C	17½
Bosch 1617EVSPK	17

Written by **Bob Hunter** with **Jan Svec**

MANUFACTURER	MODEL	TYPE OF BASES (1)	MOTOR: RATED AMPERAGE	MOTOR: SPEED RANGE (MIN.–MAX.), RPM x 1,000	COLLET TIGHTENING METHOD (2)	FIXED BASE (3): HEIGHT-ADJUSTMENT MECHANISM (4)	FIXED BASE (3): SUBBASE OPENING, INCHES	FIXED BASE (3): BASE OPENING W/O SUBBASE, INCHES	FIXED BASE (3): MAX. COLLET TRAVEL, INCHES	
BOSCH	1617EVSPK	2	12	8–25	W	TR	2 1/16	3¾	1⅝	
BOSCH	MRC23EVS	2	15	10–25	W	TR	2 1/16	3¾	1½	
CRAFTSMAN	28084	3	12.5	12–25	L	TR	1 3/16	3 11/16	2	
FREUD	FT3000VCE	P	15	8–21	L	NA				
MILWAUKEE	5616-24	2	13	10–24	W	TR	2½	3 5/16	1⅝	
PORTER-CABLE	895PK	2	12	10–23	L	RP	2½	3 7/8	2 1/8	
RIDGID	R29302	2	11	10–23	L	TR	2½	3 5/8	2	
TRITON	MOF001C	P	13	8–20	L	NA				
TRITON	TRA001	P	15	8–20	L	NA				

NOTES
1. (2) Kit with fixed and plunge bases
   (3) Kit with fixed, plunge, and D-handle bases
   (P) Plunge
2. (L) Spindle lock and one wrench
   (W) 2 wrenches
3. (NA) Does not come with a fixed base
4. (TR) Threaded rod
   (RP) Rack and pinion with quick release
   (NA) No height-adjustment mechanism

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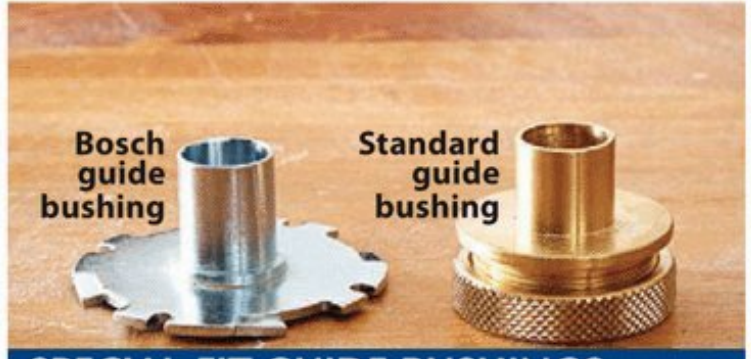
6. Accessories

The Bosch MRC23EVS and Craftsman come with the most standard accessories, adding value because you don't have to buy these later. With the Bosch you get a centering cone (to center the subbases to the spindle), three dust-collection hoods, three of its proprietary guide bushings (shown *right*), and an adapter for Porter-Cable-style guide bushings. The Craftsman comes with three dust hoods, an edge guide, and a D-handle fixed base—a nice option if you dedicate your regular fixed base to a router table.

All the routers except the Bosch 1617EVSPK come with at least one dust hood that connects to your shop vacuum. (But few of the ports on tested models were the same size, requiring adapters or duct tape.) Craftsman, Milwaukee, and Ridgid gobbled dust best.

The Craftsman and Ridgid kits come in canvas bags that are easy to repack and store accessories, but don't offer the protection of a hard-plastic case. Both Bosch routers, the Milwaukee, and the Porter-Cable come in plastic cases. We like Porter-Cable's best because the motor stores easily in either base and there's room for optional accessories. The rest don't include a carrying case.



SPECIAL-FIT GUIDE BUSHINGS

Bosch guide bushings fit only Bosch routers, locking into a special holder (photo at right). P-C-style bushings tighten with a threaded ring into premolded subbase openings.

Accessories scorecard

Bosch MRC23EVS	4½
Porter-Cable 895PK	4½
Ridgid R29302	4½
Craftsman 28084	4
Milwaukee 5616-24	3½
Triton MOF001C	3
Triton TRA001	3
Bosch 1617EVSPK	2
Freud FT3000VCE	1½

DO-IT-ALL ROUTERS: THE ONLY ONE YOU'LL EVER NEED

BASE						PERFORMANCE RATINGS (6)																ACCESSORIES (8)		WEIGHT, LBS-OZ						
PLUNGE BASE						PRIMARY						SECONDARY																		
												FIXED-DEPTH USE				PLUNGE USE														
NUMBER OF TURRET DEPTH STOPS	MAX. PLUNGE DEPTH, INCHES	HEIGHT-ADJUSTMENT MECHANISM (4)	SUBBASE OPENING, INCHES	BASE OPENING W/O SUBBASE, INCHES	BASE SHAPE (5)	OBSERVED POWER (7)	OVERALL COMFORT AND CONTROL	LACK OF VIBRATION	ROUTER-TABLE USE	EASE OF CHANGING BITS	EASE OF CHANGING BASES (3)	SETTING CUTTING DEPTH	DEPTH-SCALE READABILITY	DEPTH-SCALE ACCURACY	DUST CONTROL	PLUNGE SMOOTHNESS	PLUNGE LOCK RELIABILITY	EASE OF ADJUSTING DEPTH STOP	DEPTH-SCALE READABILITY	PLUNGE-DEPTH ACCURACY	DUST CONTROL	EASE OF USING POWER SWITCH	EASE OF REPACKING CASE	STANDARD	OPTIONAL	WITH FIXED BASE	WITH PLUNGE BASE	CORD LENGTH, FEET-INCHES	NOISE LEVEL, DECIBELS, NO LOAD	WARRANTY, YEARS (9)	COUNTRY OF ASSEMBLY (10)	SELLING PRICE (11)
8	2 5/16	NA	2 1/16	3 5/16	F	B	A-	A	B	A	B+	b	a	a	d	b+	a	a	a-	a	d	b	b-	A,C,W	D,E,F,G,I	8-14	10-0	9-9	97	1	M	$220
7	2 5/8	TR	2 1/16	3 5/16	F	A	A	A	B+	A	A	b	a	a	b	a	a	a	a-	a	a	a	a	A,C,D,G,W	E,F,G,I	9-3	12-6	10	100	1	M	325
5	2 7/8	TR	1 3/16	3 1/4	F	B	A	A	B+	B+	A	b+	a	a	a	b	a	a	c	b	b	b	a	D,E,H,W	C,G,I,S	8-13	10-6	10-6	99	1	C	220
4	2 9/16	TR	2 3/8	3 5/8	F	A	C	B	A	A	NA	b+	a	a	b	b	a	b+	a	a	b	a	NA	A,D,W	E,G	NA	13-0	9-7	107	5	S	350
6	2 7/8	TR	1 5/16	3 5/16	R	B+	A	A	A-	A	A	a	a	a	b+	b	a	b-	a	d	b+	b	b-	C,D,W	E,G,H	8-13	11-6	8	102	5	C	240
6	2 1/4	NA	1 1/4	3 5/8	F	B	A	A	A-	B-	A	a	a	a	d	b	a	a	b	a	a	a	a	C,D*,W	D,E,G	8-10	11-12	10	97	3	M	260
32	2 1/2	NA	1 3/16	3 5/8	R	B	A	A	A-	B	A	a	a	a	a	b+	a	a	b	a	b+	b	a	C,D,W	E,G,P	8-9	10-15	12-3	96	3*	C	200
3	2 7/8	RP	3 1/8	3 1/8	R	B+	B-	A	A	A	NA	b	NA	NA	b	a	a	b	NA	NA	b	a	NA	D,E,W	G	NA	10-8	6-8	96	1	T	200
3	3 1/8	RP	3 1/8	3 1/8	R	A	C	A	A	A	NA	a	NA	NA	b	a	a	a	NA	NA	b	a	NA	D,E,W	G	NA	14-2	6-5	98	1	T	270

5. (F) Round with a flat edge
   (R) Round

6. A Excellent
   B Good
   C Fair
   D Poor
   NA Not Applicable

7. Measured with a phototachometer while routing a raised-panel profile on a router table.

8. (A) Subbase adapter for guide bushings
   (C) Centering cone
   (D) Dust-collection hood (*=Plunge base only)
   (E) Edge guide
   (F) Fine adjustment control extension
   (G) Guide bushings
   (H) D-handle base
   (I) Inlay kit
   (P) Plunge depth adjustment extension
   (S) Optional subbases
   (W) Router-table depth-adjustment wrench

9. (*) Lifetime service agreement available upon registration.

10. (C) China
    (M) Mexico
    (S) Spain
    (T) Taiwan

11. Prices current at time of article production and do not include shipping, where applicable.

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Luminous Display Pedestal

By day, it's a display table with clean, simple lines. It really shines after dark, though.

Woodworkers talk about finishing wood to make the grain glow. But when you turn on the light inside this display table, the grain literally shines as the quilted maple veneer panels come to life.

Clearly it's time to start

1 Mount a general-purpose blade and zero-clearance insert on your tablesaw and raise the blade to ¼". Cut four 12×32½" panels from .08"-thick clear polycarbonate. (We used Lexan polycarbonate instead of less-expensive plastics for its added impact resistance and rigidity.) Peel the protective plastic off one side of each panel and sand the surface with 150-grit sandpaper until it looks frosted. Later, that will provide a "tooth" to improve the epoxy's bond.

2 Trim four veneer sheets to the same size as the polycarbonate panels.

SHOP TIP

Flatten veneer for perfect panels

Until you're ready to use the veneer sheets, store them pressed between two sheets of ¾" MDF weighted with two concrete blocks. To avoid bubbles or gaps between the veneer and the polycarbonate sheets, start by flattening your veneer. To flatten the veneer, spray it with a commercial veneer softener (see **Sources** on *page 65*), place paper towels on both sides, and press the veneer and towels between MDF sheets until dry.

Overall dimensions: 17" wide × 17" deep × 40¾" high.

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Attach veneer to the polycarbonate panels

A APPLY THE EPOXY

Pour the epoxy down the center of the panel immediately after mixing. The hardener we used causes the mixture to gel in 15 minutes.

B SPREAD ADHESIVE TO THE EDGES

Working outward from the center, distribute epoxy across the polycarbonate panel until you have an even, thin layer.

C PLACE THE VENEER

Begin at one end of the polycarbonate panel and carefully lower the veneer in place. Press out air bubbles using a roller.

D MAKE A SIMPLE VENEER PRESS

Allow yourself plenty of clamps to generate the pressure necessary to bond veneer to the polycarbonate panel.

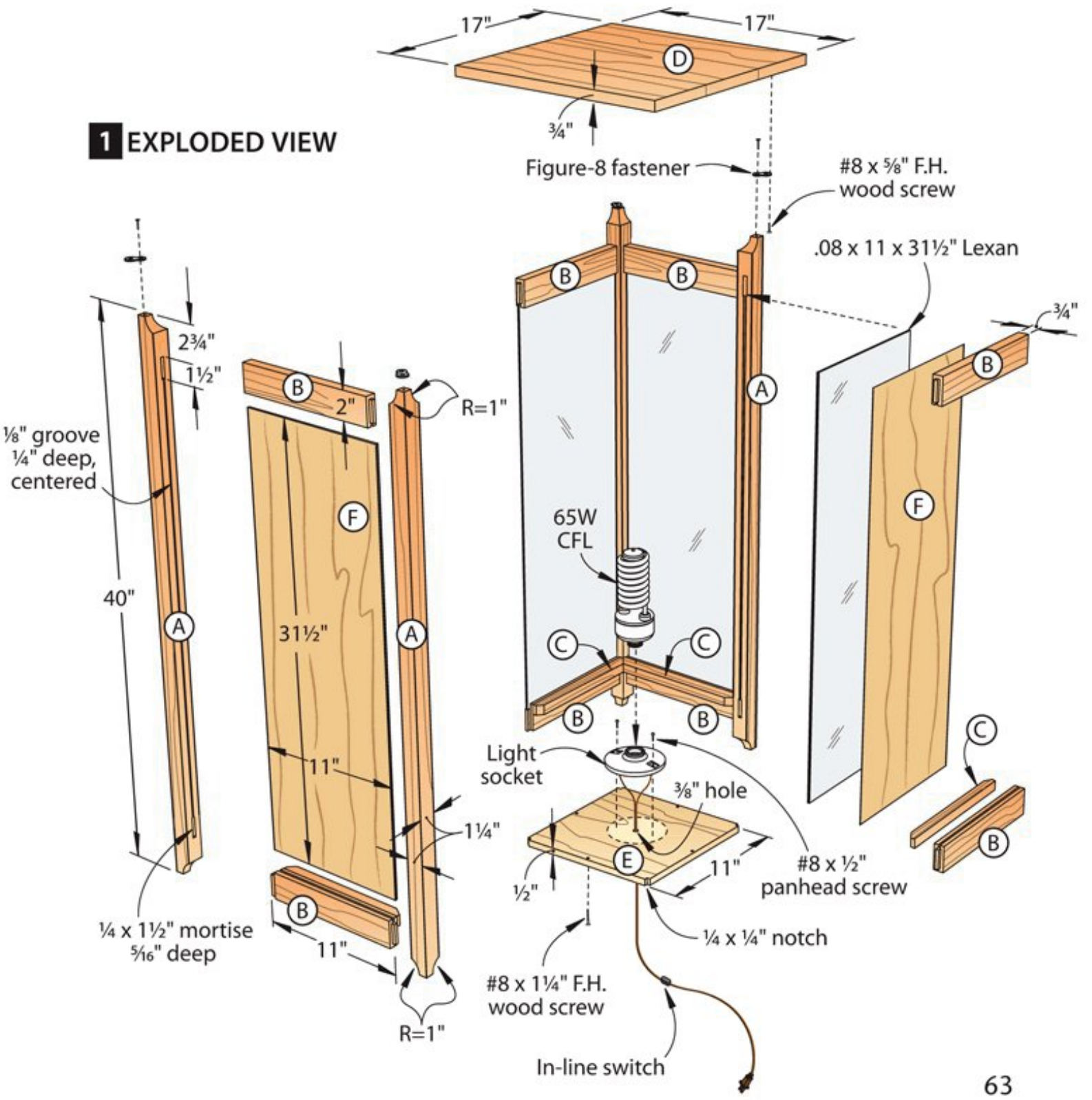
(We used quilted maple veneer.) If your veneer has a wavy texture, see the **Shop Tip**, *left* for a way to flatten it. Then cut two sheets of ¾×12×32½" MDF to create a press for bonding the veneer to the polycarbonate. Lay a sheet of waxed paper on one MDF sheet, then a polycarbonate panel with the sanded face up.

3 Mix one ounce of epoxy resin (see **Sources**, *page 65*) to one-half ounce of hardener in a disposable container and stir. Pour the mixture on the polycarbonate panel [**Photo A**]. **Safety note:** *You'll likely mix more epoxy than you'll use for each panel. Leftover epoxy can reach temperatures too hot to touch, so leave the cup of surplus on a noncombustible surface until it cures and cools.*

4 Using a wood scrap, spread the epoxy to the edges and corners of the polycarbonate [**Photo B**]. Then immediately lay the veneer over the polycarbonate [**Photo C**] and cover it with a sheet of waxed paper.

5 Lay on the second sheet of MDF and clamp the stack [**Photo D**]. Repeat steps 3, 4, and 5 to veneer the remaining three panels. Let the epoxy cure overnight, remove the MDF and waxed paper, and carefully sand the veneer from 180 to 220 grit.

1 EXPLODED VIEW



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Cut legs to hold the panels

1 Cut the legs (A) to size [**Drawing 1**, **Materials List**]. Center the mortise locations [**Drawing 2**] on the two inside faces of each leg. **Note:** *The mortises measure the same distance from each end.*

2 Install a ¼" Forstner bit in your drill press and drill overlapping holes 5/16" deep to form mortises in the legs. Then chisel square the mortise corners and walls.

3 Measure the thickness of the veneered polycarbonate panels. (Our panels measure a hair less than ⅛" thick.) Install a ⅛" straight bit in your table-mounted router, set the depth to ¼", and rout a centered groove between the mortises on each leg [**Photo E**]. If you need grooves slightly wider than ⅛", see the **Shop Tip** *below right.*

4 Use a 2"-diameter object or round-hole template to mark a 1" radius on the inside faces of both ends of each leg [**Drawing 2**, **Photo F**]. Bandsaw and sand to the lines. Finish-sand the legs to 220 grit and set them aside.

You're ready for the rails

1 Cut the rails (B) and cleats (C) to size, and chamfer both ends of each cleat [**Drawing 3**]. Then cut ¼"-thick tenons centered on both ends of each rail. Using a ⅛" straight bit, rout a centered groove on the inside edge of each rail. Sand the rails and cleats to 220 grit.

2 Dry-assemble two legs (A) and two rails (B), then double-check the measurements between the grooves in the legs for the size of the veneered panels. If necessary, recut the panels to 1/16" smaller than your measurements. Remove the second protective sheet from the polycarbonate and insert the sheet into a leg groove with the veneer facing out. Glue and clamp the frame/panel assembly [**Photo G**], restricting the glue to the tenons. Repeat for the second assembly.

3 Apply glue to tenons on the remaining four rails (B) and insert them into the mortises on a framed panel (A/B/F). Add the other two polycarbonate and veneer panels and the second framed panel, and clamp [**Photo H**].

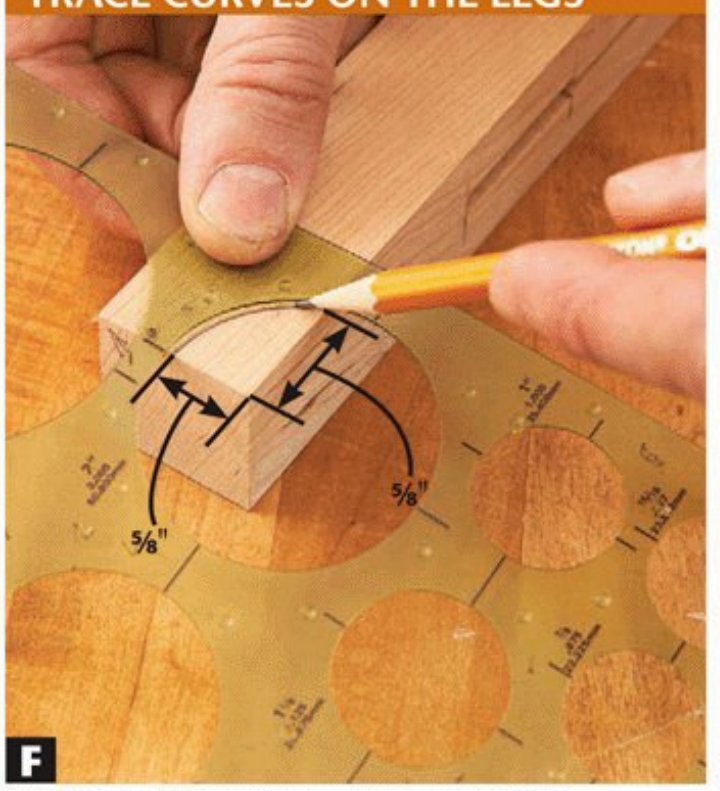
4 Glue and clamp cleats (C) to the bottom rails (B) with the top edges flush.

5 Edge-glue stock to make a blank for the top (D); then cut it to size. On the underside, drill four counterbores for the figure-8 fasteners [**Drawing 4**]. Then finish-sand the top and pedestal to 220 grit and apply three coats of clear finish. (We used General Finishes Arm-R-Seal satin, sanding with a 320-grit sponge between coats.)

ROUT BETWEEN THE MORTISES

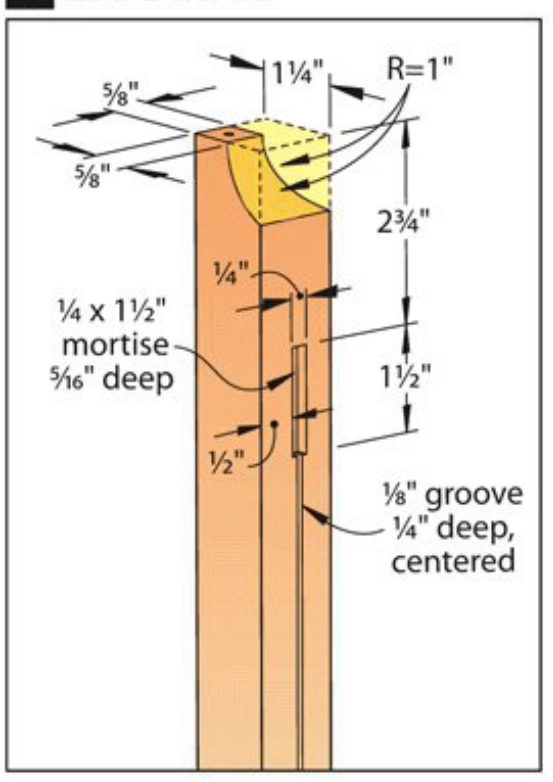
Begin the groove by dropping the mortise over the straight bit. Stop when the bit reaches the opposite mortise.

TRACE CURVES ON THE LEGS

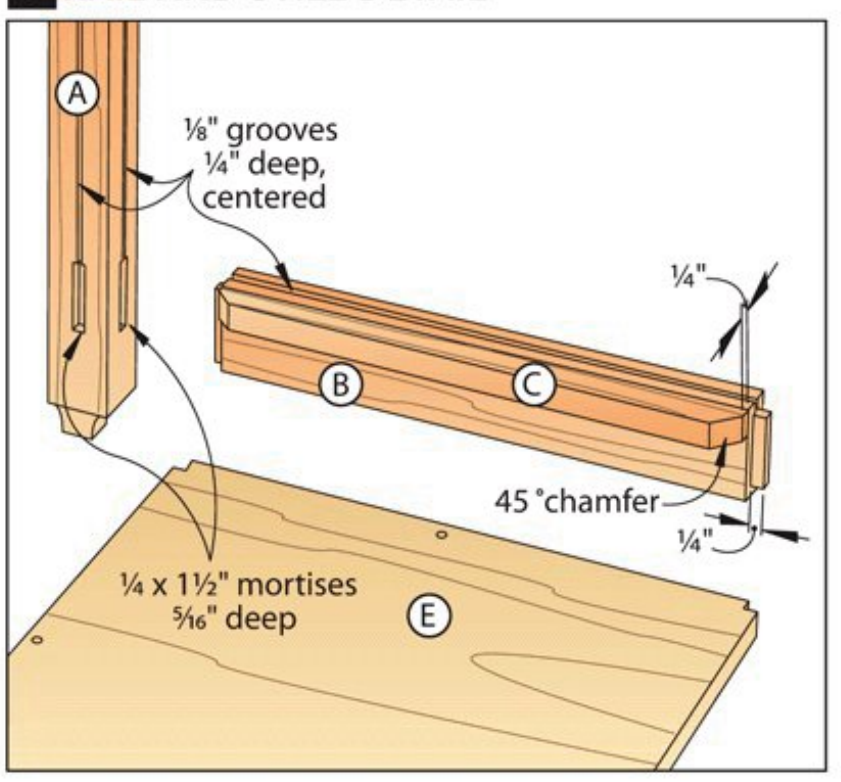


The markings on this circle template, available at art and office supply stores, help you quickly draw accurate quarter-circles.

2 LEG DETAIL



3 RAIL AND STILE DETAIL



Let there be light

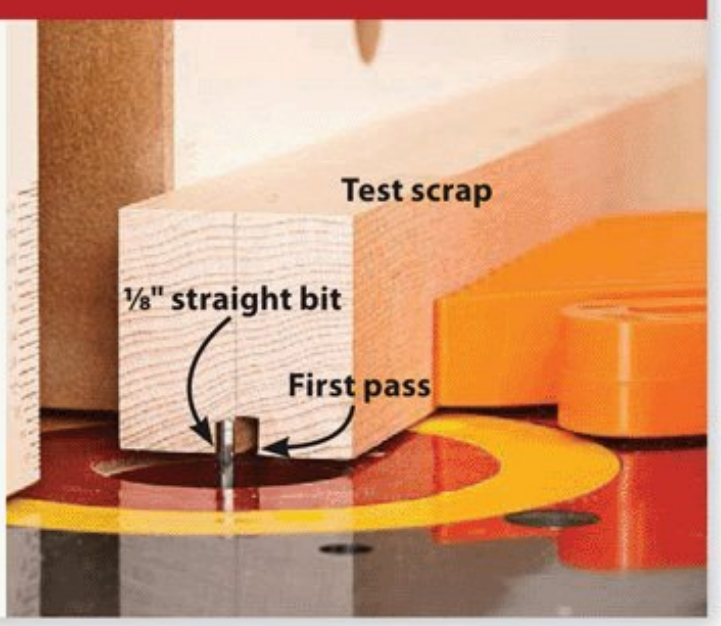
1 Cut the bottom (E) to fit between the four bottom rails (B), and cut a ¼×¼" notch at each corner. Drill a centered ⅜" hole for the electrical cord. We bought an 8' lamp cord with a plug on one end and an in-line switch at a local hardware store.

2 Run the wire through the centered hole in the bottom (E) and attach the ends to a light socket [**Photo I**]. Screw the light socket to the bottom using #8×½" panhead screws and install a compact fluorescent lamp. **Note:** *We opted for the compact fluorescent equivalent of a 300-watt incandescent lamp because it*

SHOP TIP

Rout grooves in two passes

If your veneered polycarbonate panels measure slightly thicker than ⅛", rout one pass between the leg mortises just a hair off-center. Then flip the leg end for end and make a second pass to create a centered groove that's slightly wider than the straight bit. The panels should fit snugly, but not tight enough to damage the veneer edges and ends.



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ASSEMBLE A PEDESTAL SIDE

G

Position clamps to apply pressure directly opposite the mortise-and-tenon joints. Then check for square and flatness.

CHECK FOR 90° CORNERS

H

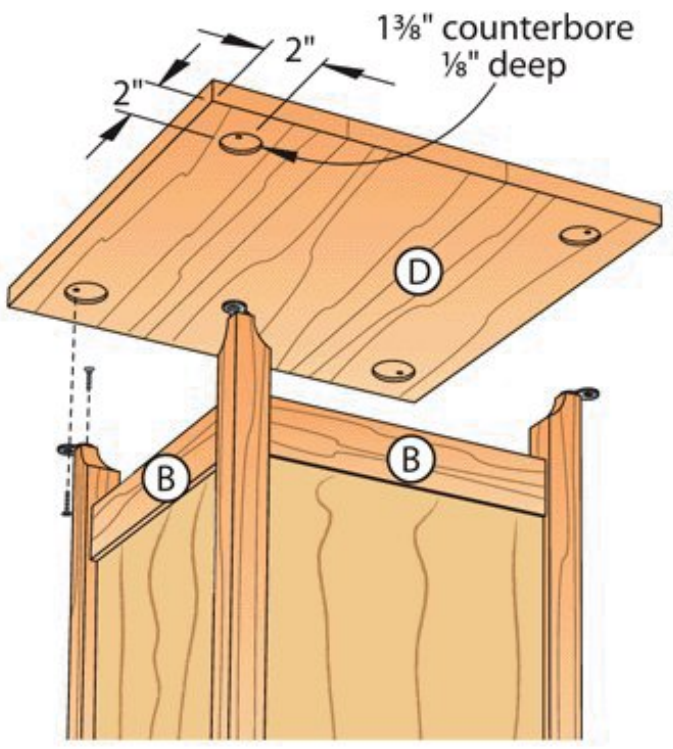
Measure diagonally between the outside corners of the legs. Equal measurements mean you've squared your glue-up.

WIRE THE PEDESTAL FOR LIGHT

I

Strip about ½" from the ends of the cord, twist them around the light socket screws, and tighten them in place.

4 TOP MOUNTING DETAIL



generates less heat and should last 6,000 hours. Avoid incandescent or halogen lamps that can create enough heat to damage the polycarbonate.

3 Drill and screw the bottom (E) to the cleats (C). Then place the top (D) on your bench with the counterbores up. Screw figure-8 fasteners to the tops of the legs (A) and place the legs in the counterbores [**Drawing 4**]. Drill and screw the figure-8 fasteners to the top. Now find a home for your completed display pedestal and, after the sun goes down, fill your room with the soft light of glowing wood.

Written by **Bob Wilson** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

MORE RESOURCES

FREE VIDEOS

- Go to woodmagazine.com/woodvision and look under "veneering."

RELATED ARTICLES

- "Very Easy Veneering" issue 193 (October 2009) woodmagazine.com/veveneering. $
- "Easy No-Fuss Veneering" issue 179 (October 2007) woodmagazine.com/nofussveneering. $

($=Download this article for a small fee.)

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	1¼"	1¼"	40"	C	4
B	rails	¾"	2"	11"	C	8
C	cleats	¾"	¾"	10½"	C	4
D*	top	¾"	17"	17"	EC	1
E	bottom	½"	11"	11"	BP	1
F*	veneer	–	11"	31½"	MV	4

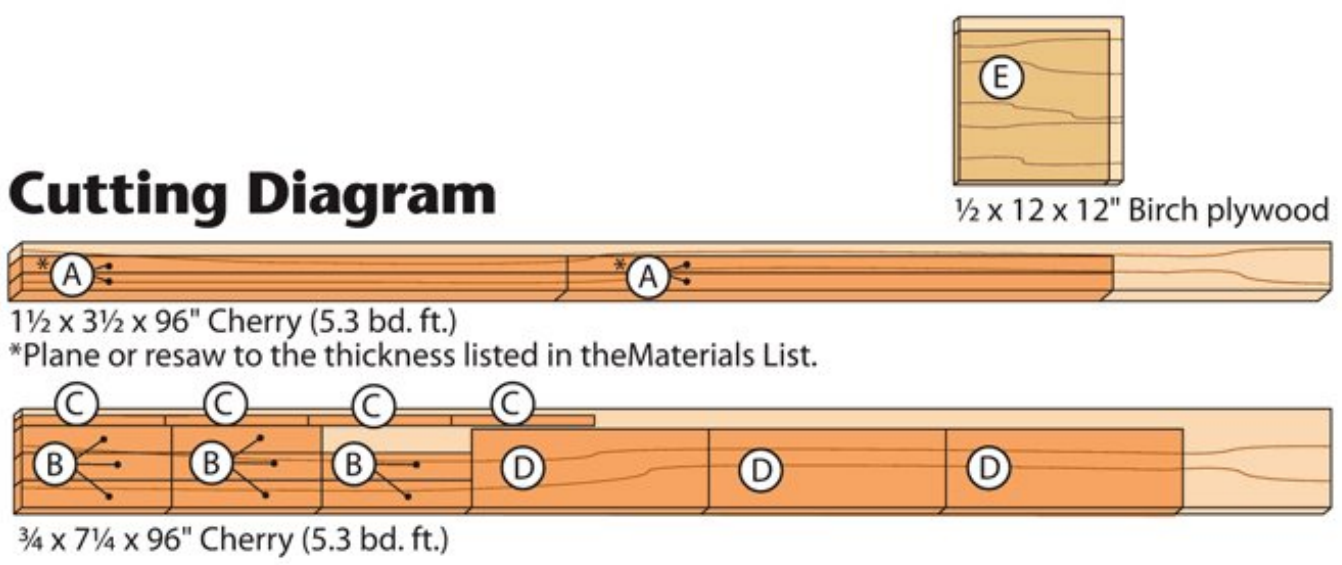
*Parts initially cut oversize. See the instructions.

Materials key: C–cherry, EC–edge-glued cherry, BP–birch plywood, MV–maple veneer.
Supplies: Figure-8 tabletop fasteners (4), #8×1¼" (4) and #8×⅝" (8) flathead wood screws, and #8×½" panhead screws (2).
Electrical: Plastic light socket, 8' lamp cord with in-line switch, and 65-watt compact fluorescent lamp (equal to a 300-watt incandescent), all available at home centers and hardware stores.
Bits: ⅛" straight router bit, ¼" and 1⅜" Forstner bits.

Sources

Quilted maple veneer: Order four slices at least 12" wide at their narrowest and 32½" long to avoid joining strips. Call suppliers for availability and price information plus photos of specific veneers. B&B Rare Woods, 303-986-2585, wood-veneers.com. Certainly Wood, 716-655-0206, certainlywood.com. Joe Woodworker, veneersupplies.com.
Veneer Softener: Pro-Glue veneer softener no. 828924, $15 for a quart, Woodcraft, 800-225-1153 or woodcraft.com.
Epoxy: System Three epoxy resin no. 124520, $27 for a quart, and #1 hardener no. 124522, $22.50 for a pint, Woodcraft.
Polycarbonate sheet stock: Clear Lexan, .08"×3×4', $65–$68 at most home centers and hardware stores.

Cutting Diagram



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READER PROJECT

Bread-Dipping Tray

Dimensions:
Double-Dish Tray: 1" thick × 6¾" wide × 22¼" long
Single-Dish Tray: 1" thick × 6¾" wide × 16½" long

Satisfy your craving for a quick project

These serving trays, designed by reader Ralph Bagnall of Murfreesboro, Tennessee, were inspired by a popular appetizer: freshly baked bread served with a dish of seasoned olive oil.

Using Ralph's techniques, we made two-dish and single-dish versions, each using Lyptus and bamboo. (Other good woods would be tight-grained species such as maple, beech, cherry, and walnut.) Ralph shares his methods for crafting them below.

—Craig Ruegsegger, Projects Editor

Buy dishes, make a tray

Before starting, I have my oil dishes on hand to ensure accurate layout of the recesses for them. Also, the trays require ¼"-thick stock; I create mine by resawing thicker stock [**Skill Builder,** *opposite page*].

1 Cut blanks for the top, middle, and bottom layers of the tray (A) ½" longer and wider than listed [**Materials List, Drawings 1, 3a**].

2 Cut two platens of ¾"-thick MDF or plywood just larger than the tray blanks, and cover the face of one platen with a glue-resistant material such as waxed paper or painter's tape. Using water-resistant glue, laminate the three tray layers [**Photo A**].

3 After the glue dries, cut the tray (A) blank to size [**Drawing 1**]. Lay out the shape, but don't cut it yet.

Build the routing jig

1 Cut the jig parts to size from ¼" hardboard and ¾" MDF or hardwood [**Drawing 2**]. To determine the radius of the round hole, add ¼" to one-half the diameter of the dipping dish's base. Lay out the hole, and cut and sand it smooth.

2 Screw the two endpieces and one middle hardboard piece to a cleat [**Drawing 2**]. Place this assembly over the tray (A) blank. With the remaining cleat against the blank, position the last hardboard piece, and screw it to the cleat.

3 Mount a 1" guide bushing in the base of your router and install a ½" straight bit. ***Quick Tip! For clean cuts, rout with a twist.*** I use a spiral upcut bit to eliminate grain fuzzing and tear-out. From ¼" hardboard or plywood, make a 6×16" auxiliary subbase for your router. In the center of the auxiliary sub-

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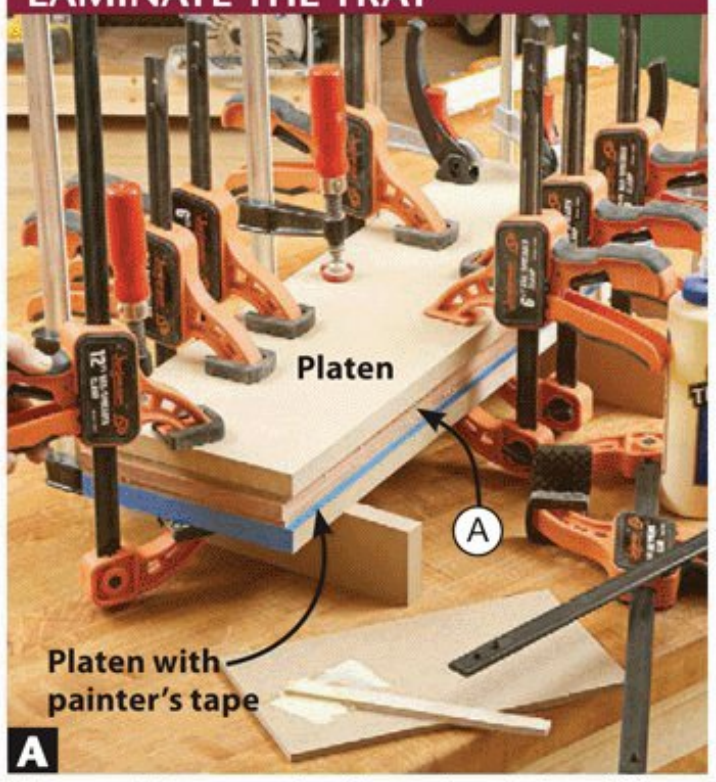
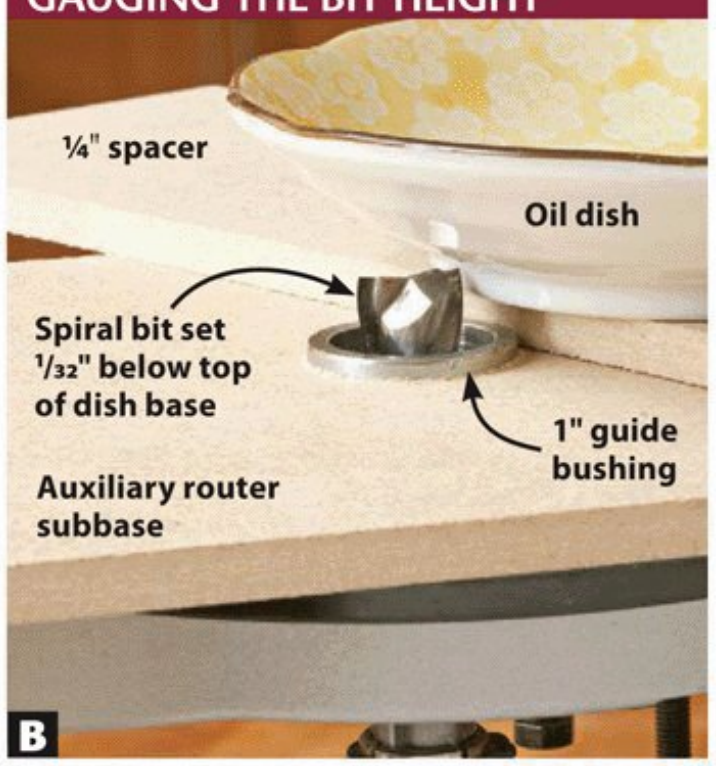
LAMINATE THE TRAY



Thoroughly cover the face of each tray (A) layer with glue. Firmly clamp the layers between the platens for at least two hours.

GAUGING THE BIT HEIGHT



Stack your oil dish and a ¼" spacer on the subbase. Adjust the router bit to match the height of the dish's base, then retract it 1/32".

base, drill a hole to fit the bushing. Adhere the subbase to your router with double-faced tape.

Time for recess

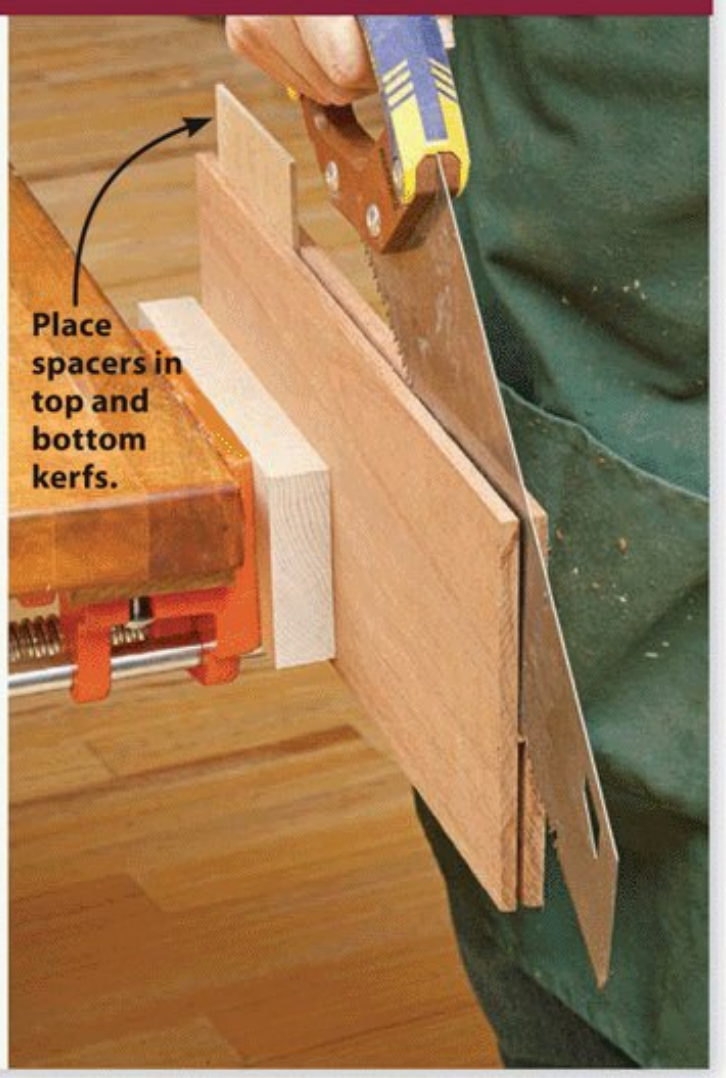
1 To set the router-bit height, use the oil dish as a gauge [**Photo B**]. Position the jig over the tray (A) with their ends flush and clamp the assembly to your bench [**Photo C**]. Starting in the center and working out to the edge, rout the round recess. (I have a helper hold a vacuum hose near the recess to clear the chips.) Lower the bit 1/32" for a cleanup pass. For the double-dish tray, flip the blank end for end, raise the bit 1/32", and rout the other recess in the same way.

2 Without changing the bit height, rout the center recess. Lower the bit 1/8" or less for each successive pass until you reach the 7/16" depth of the center recess [**Photo C**]. Again, remove 1/32" or less on the final pass.

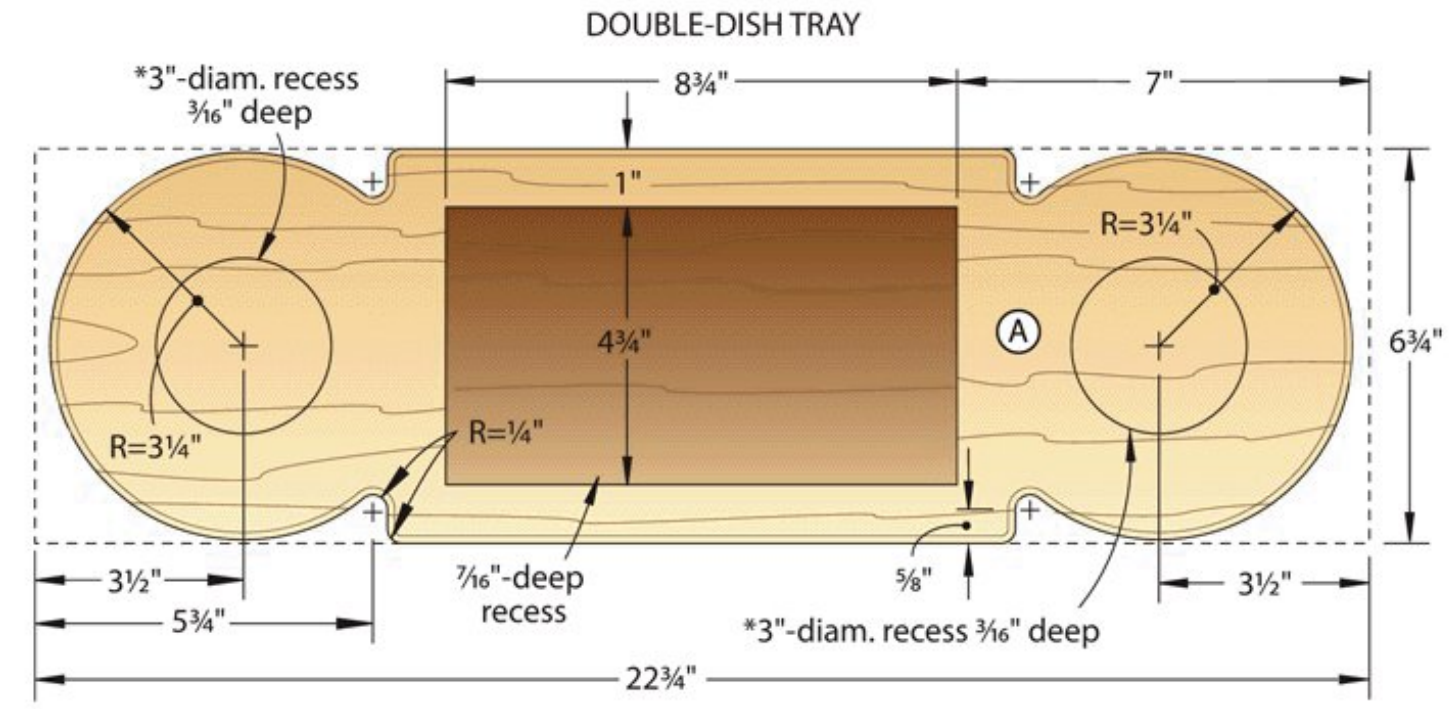
SKILL BUILDER

Simple resawing for thin stock

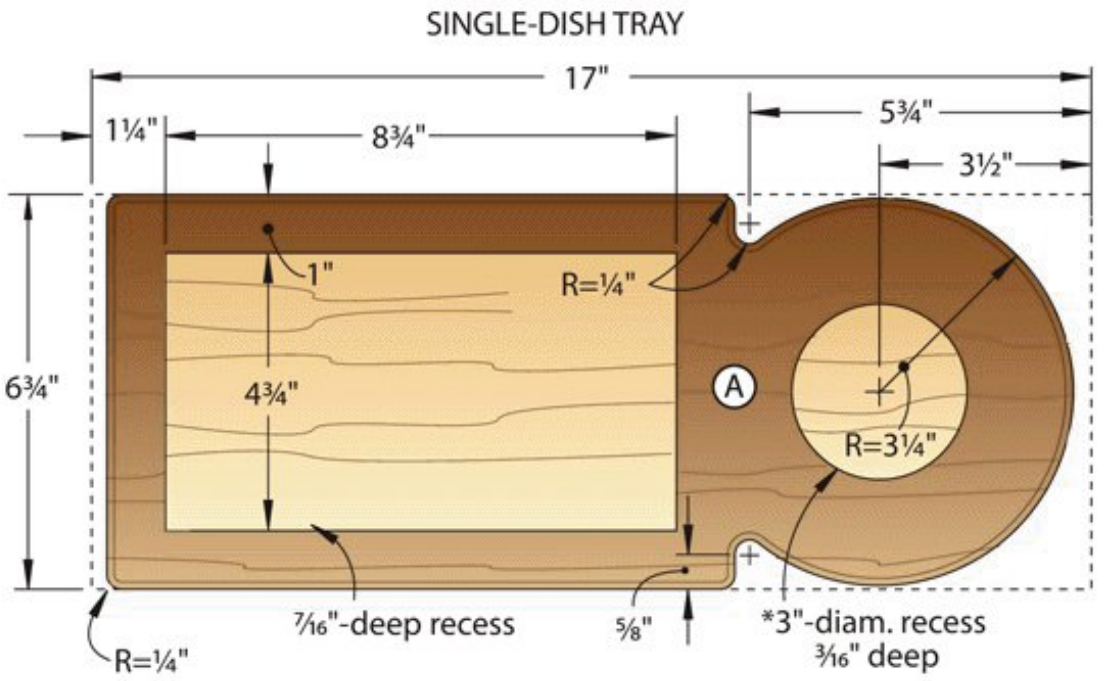
To make the ¼"-thick top and bottom layers of the tray (A) lamination, resaw a piece of ¾"-thick stock at least 7" wide. I prefer to do my resawing on the tablesaw—at least partially. Raise the blade 1½" above the table. Then position the rip fence to center the blade on the thickness of the board. Standing the board on one edge, run it over the blade, then flip the piece end for end and, keeping the same face against the fence, rip the opposite edge. Raise the blade as high as it will go and repeat this procedure. Slide spacers into the kerfs to hold them open, and cut through the thin connecting piece with a handsaw, *right*. Saw half the length, then flip the board around to complete the cut. Plane the boards to ¼" thick and you're ready to begin building your tray.



1 TRAY OPTIONS



* Diameter and depth based on available serving piece; see the instructions.



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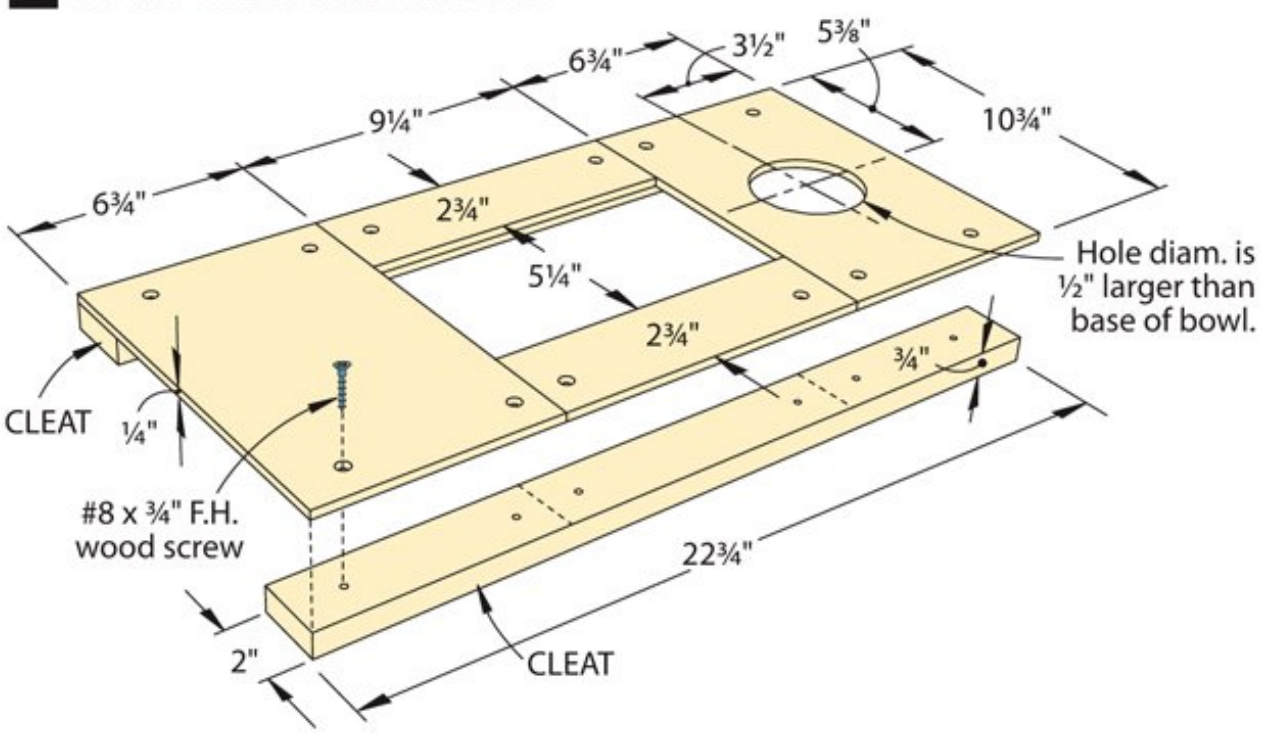
2 BREAD-TRAY ROUTING JIG



BRIDGE THE JIG AND ROUT

The auxiliary base spans the jig, keeping the router from tipping into the recesses as it works. Rout slowly to avoid tear-out.

3 Leave the jig in place, and cut two spacers to assist with chiseling the corners square [**Photo D**].

Make a groovy grid

Breaking bread causes crumbs. I designed the insert (B) so crumbs fall through, trapping them in the recess. Simply remove the insert for easy cleanup.

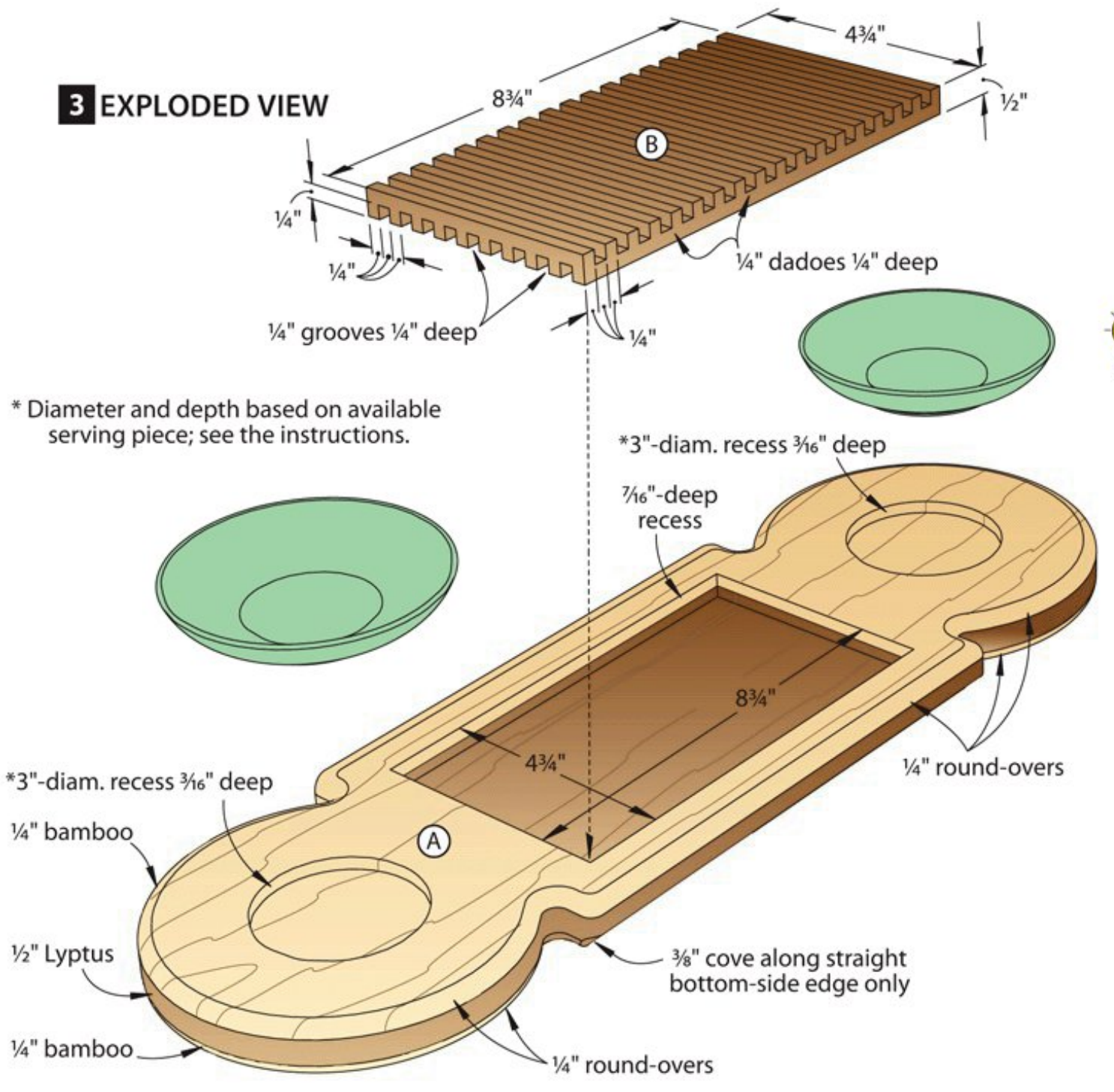
1 From ½" stock, cut the insert (B) to fit the recess in the tray (A) [**Drawing 3**].

2 Set up a ¼" dado blade in your tablesaw and, making test cuts on scrap the same thickness as the insert, raise the blade until its height is exactly one-half the thickness of the insert. ***Quick Tip! Find half without measuring.*** I do this test by making a cut on one face, then flipping the piece and making a cut on the opposite face. When the second cut just removes the remaining thickness, I'm ready. Set your rip fence ¼" from the blade; then attach to your miter gauge an extension that reaches past the blade.

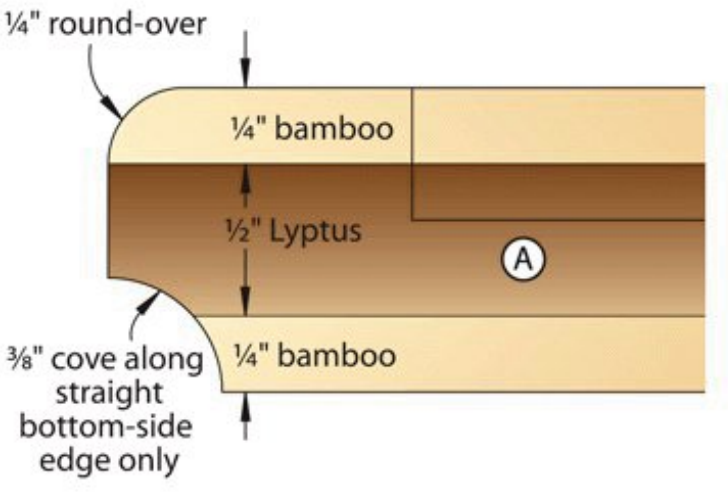
3 With the insert (B) facedown, cut two grooves by running each long edge against the fence. Flip the insert faceup and, guiding the piece with your miter gauge, cut dadoes with each end against the fence. Move the fence to ¾" from the blade (I recommend measuring with a steel rule for accuracy) and repeat this process [**Photo E**]. Keep moving the fence in ½" increments until you have a ¾"-wide area remaining in the center of the grooved face. Center the blade in this area and make a final pass on this face only.

4 If necessary, reset the fence to the next ½" increment and continue cutting dadoes on the opposite face. When ¾" remains in the center of the face, center the final dado as before. ***Quick Tip! Cleaning up blade burn marks.*** I wrap a narrow scrap in sandpaper and sand the sides and bottoms of the dadoes and grooves.

3 EXPLODED VIEW



3a TRAY SECTION VIEW



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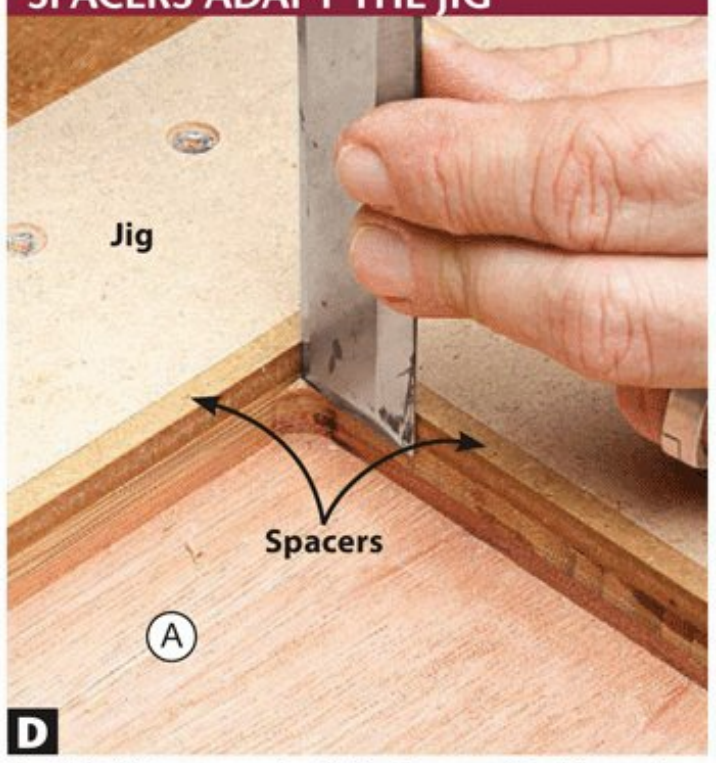
SPACERS ADAPT THE JIG



Cut ¼×¼" spacers to fit between the jig and the edges of the recess. Pare straight down along the spacers to square up the corners.

Shape the tray

1 Using a ¼" blade, bandsaw the tray (A) to rough shape, staying 1/16" outside the marked cutline. Sand up to the line with a spindle sander, or a drum sander mounted in your drill press.

2 At the router table, machine the ¼" round-overs around both faces of the tray (A) [**Drawing 3**; **Shop Tip**, *above right*]. Switch to a ⅜" cove bit and make three successively deeper passes to rout the cove along the bottom straight edges only **[Drawings 3, 3a]**.

3 Sand the tray (A) and insert (B) to 220 grit, easing the edges and ends of the recesses and the insert.

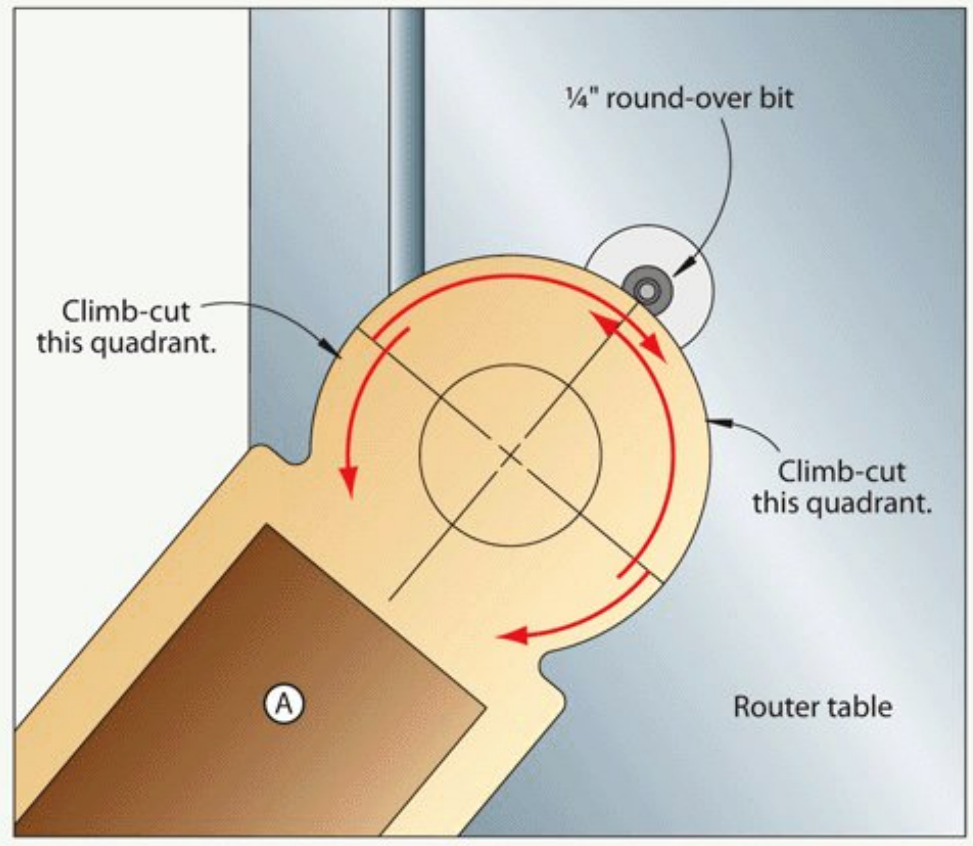
4 To reach all the nooks and crannies in the insert (B), I brush on three coats of a water-based polyurethane finish. Between coats, buff lightly with 320-grit sandpaper, wrapping it around the edge of a scrap of ⅛" hardboard to reach into the grid of the insert. After the finish dries for 72 hours, it is safe for serving food. Drizzle olive oil and seasoning in a dish, warm some bread, and *bon appétit*.

SHOP TIP

Reverse routing tames tear-out

When routing the edges of a round piece, the grain direction changes as you rotate the workpiece. This can result in chip-out at certain points. To prevent this, I feed the workpiece in the opposite direction, known as a "climb-cut," in these problem areas.

To know where to climb-cut, imagine a clock face on the round piece with the 12 and 6 lined up with the grain direction. Rout as shown in the drawing, rotating the piece counterclockwise from 9 o'clock to just past the 12 o'clock position and from 3 o'clock toward 6 o'clock. Rotate the workpiece clockwise to rout the remaining areas. The clockwise rotation creates a climb-cut, and the bit will want to grab the workpiece. I hold the tray firmly and take very light cuts.



Produced by **Craig Ruegsegger** with **Jeff Mertz** and **Ralph Bagnall**
Project design: **Ralph Bagnall**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Materials List (Double-dish tray)

Part		FINISHED SIZE T	W	L	Matl.	Qty.
*A	double-dish tray	1"	6¾"	22¼"	B/L	1
B	insert	½"	4¾"	8¾"	L	1

*Laminated part initially cut oversize. See the instructions.

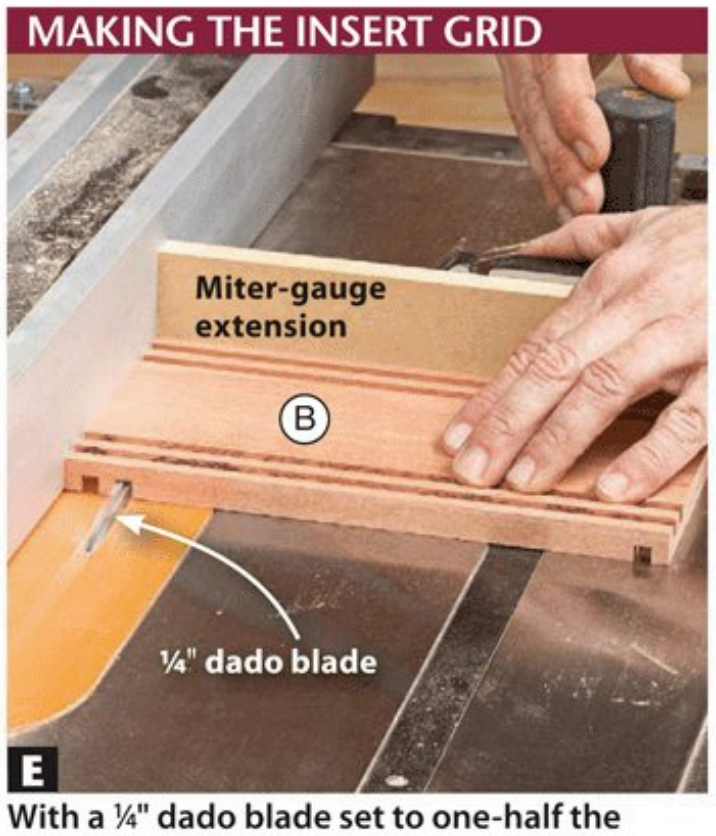
Materials List (Single-dish tray)

Part		FINISHED SIZE T	W	L	Matl.	Qty.
*A	single-dish tray	1"	6¾"	16½"	B/L	1
B	insert	½"	4¾"	8¾"	B	1

*Laminated part initially cut oversize. See the instructions.

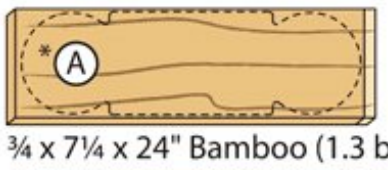
Materials key: B–bamboo, L–Lyptus. **Supplies:** Double-faced tape, 1" guide bushing.
Blades and bits: Stack dado blade; ½" spiral upcut, ¼" round-over, ⅜" cove router bits.

MAKING THE INSERT GRID

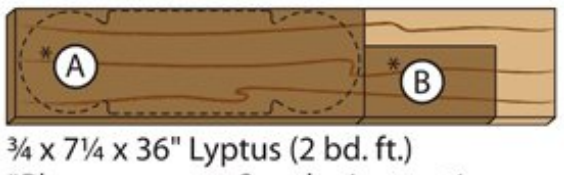


With a ¼" dado blade set to one-half the thickness of the insert (B), perpendicular cuts on opposite faces create a grid.

Cutting Diagram (Double-dish tray)

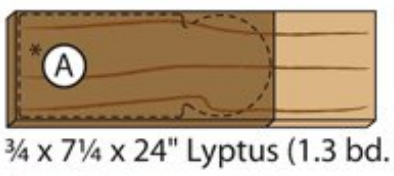


¾ x 7¼ x 24" Bamboo (1.3 bd. ft.)

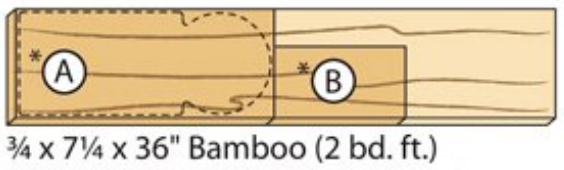


¾ x 7¼ x 36" Lyptus (2 bd. ft.)
*Plane or resaw. See the instructions.

Cutting Diagram (Single-dish tray)



¾ x 7¼ x 24" Lyptus (1.3 bd. ft.)



¾ x 7¼ x 36" Bamboo (2 bd. ft.)
*Plane or resaw. See the instructions.

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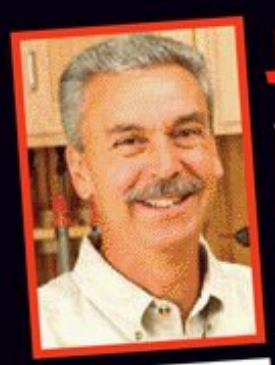

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Get it FREE or Get it EASY

The *WOOD* guide to getting wood

Take your pick: On one extreme, lumber is locked away in log form, waiting for you to slab it free with a mill and some muscle. On the other, you drop it into a shopping cart, surfaced, edge-glued, and shrink-wrapped.

The long journey wood takes from log to project-ready lumber affords you plenty of purchase points. Along the way, you'll find a direct relationship between convenience and cost per board foot; as one goes up, so does the other. So where does your budget and ambition place you in the cost/convenience continuum? Read on to learn all about your lumber-buying options.

Personal/Portable Sawmill

If you have access to wood in tree form, and the muscle/machinery to move it, consider buying a backyard bandsaw mill to satisfy your lumber addiction.

Don't let the entry price tag of $3,000 to $6,000 scare you away from investing in one of these burly bandsaws. For most woodworkers, the wood savings will quickly cover the mill cost. And you can speed the savings by selling some of the lumber you produce. But even if a mill isn't in your future, you can start saving money now by hiring a portable-mill operator to break down your logs.

Buy or hire, be sure to take drying options into consideration when you step into the green-wood world. See the *next page* for a rundown of your drying options.

Commercial Sawmill

Even if the nearest commercial sawmill is half a state away, the wood and the savings make the drive worthwhile. Expect to find warehouses full of expertly kiln-dried, graded lumber at near-wholesale costs. Sawmills generally aren't set up to handle retail shopping; you won't get to pick through the piles for the perfect board. So, be sure to call ahead with your order—species, grade, and quantity—to ensure it is available and will be waiting. Expect a minimum order requirement or a sliding price scale that encourages larger orders.

Hardwood Retailer

Not limited to local logs, your wood retailer brings to the table a smorgasbord of species both domestic and exotic. If you're the type of connoisseur who likes to see, feel, even smell the wood before you take it home to your shop, head for the hardwood store.

In many cases, you'll find wood in a more finished state: surfaced on both sides (S2S) and straight-line ripped on one edge (SL1E). Of course, you pay more for those additional operations, but you also come home with wood that is just short of fully dressed, with only final squaring and thicknessing needed.

Big-box Store

If your project needs to be finished before kickoff this weekend, look no farther than the wide aisles of your local home center. There, you'll find wood that has been squared and surfaced on all four sides (S4S). If you're selective, you can pick only the clearest, straightest boards, saving the trouble of further dressing with a jointer and planer. Remember, you pay a board-foot premium for that machining (and shrink-wrapping, and inventory management). But when convenience matters, the home center delivers.

Now let's look at the pros and cons of each wood-shopping method.

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Personal/Portable Sawmill

If you're not ready to buy your own sawmill, Wood-Mizer (800-553-0182, wood-mizer.com) or TimberKing (800-942-4406, timberking.com) will provide you with a list of local sawyers for hire.

Pros:

- Mill wood to any thickness.
- Walnut and cherry cost the same as pine and poplar.
- You won't pay a premium for riftsawn and quartersawn stock.
- Wider availability of species (pink-tinged box elder, sycamore, and many others depending on your location) offers options not typically sold at retail.
- With a top rate of 125 board feet per hour, a solid 16-hour weekend of work could net you as much as 2,000 board feet of lumber.
- You'll have a forest-to-finish story to tell of each project you build.

Cons:

- Hefting heavy logs is labor-intensive.
- Selection is limited to local woods.
- Great-looking logs could yield plain or even unusable lumber.
- More time milling means less time for actual woodworking.
- Drying takes months—do it wrong and you'll wind up with firewood.
- The initial investment is large: $3,000 to $6,000 for entry-level models. Labor-saving hydraulic models and trailer packages for additional portability push the price even higher.

Chainsaw mills, like the Alaskan MKIII from Granberg International (800-233-6499, granberg.com), cut much slower than bandsaw mills, but cost far less, making them a portable, if labor-intensive, alternative.

Price for Red Oak: FREE! (after investing in the equipment) or $0.40–0.60/bdft (hiring a portable sawmill owner at a rate of $50–75/hr).

Insider Secret: If you hire a sawyer, volunteer as a laborer. Manhandle logs, pull boards off the mill, sticker, stack—do everything you can to make sure the saw keeps cutting, logs keep getting loaded, and your cost per board foot keeps dropping.

More Resources:

FREE VIDEOS:

Wood-Mizer bandsaw mill demo
woodmagazine.com/woodmizer

Granberg chainsaw mill demo
woodmagazine.com/granberg

Lower Cost per Board Foot

Lumber Drying Options

If you choose to mill your own lumber, you're not quite done. Newly slabbed (green) wood needs to be dried down to a usable moisture content (typically between six and twelve percent). First, coat the ends with latex paint to slow uneven release of moisture that causes checking. After that, you have options:

Air-drying. Pick a shady spot exposed to the prevailing wind. On a bed of level, cinder-block-supported, sticker-topped 4×4 runners spaced 2' on center, stack your first layer of lumber. Keep the lumber layers of equal thickness, with the thickest boards on the bottom. Add a row of 1"-square stickers on 2' centers; then stack the next layer. Top the stack with a sheet of plywood to keep the rain off and cinder blocks for weight. Now wait. As a rule of thumb, it takes 1 year per 1" of thickness to air-dry green wood to a usable moisture content. A moisture meter takes some of the guesswork out of the process, though.

Solar kiln. You can shorten drying time from years to weeks by building a solar kiln—a cross between a greenhouse and a garden shed. Fans and baffles keep the air moving through the stack of stickered lumber. And the temperature differential speeds the drying.

Custom drying. Many sawmills offer the use of their kilns for a fee. You gain the peace of mind that comes from professional kiln-drying and low moisture content. Expect to pay $0.25-0.50 per board foot. Also, a custom drier needs enough of a load (at least 300 board feet) to keep itself weighted against curling and cupping. And boards of equal length ensure that a stack dries evenly. Depending on the type of kiln and wood species, the mill may request the wood be air-dried for a short time first.

More Resources:

Build Your Own Solar Kiln
woodmagazine.com/solarkiln

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Commercial Sawmill

These fresh-from-the-log boards are graded and stacked to be kiln-dried and warehoused for wholesale customers.

Pros:

- Prices come close to wholesale costs.
- Professionally milled and kiln-dried wood is likely to be free from checks and drying stresses.
- Additional services, such as skip-planing (see *below*), surfacing, and straight-line ripping are often available—for an upcharge.

Cons:

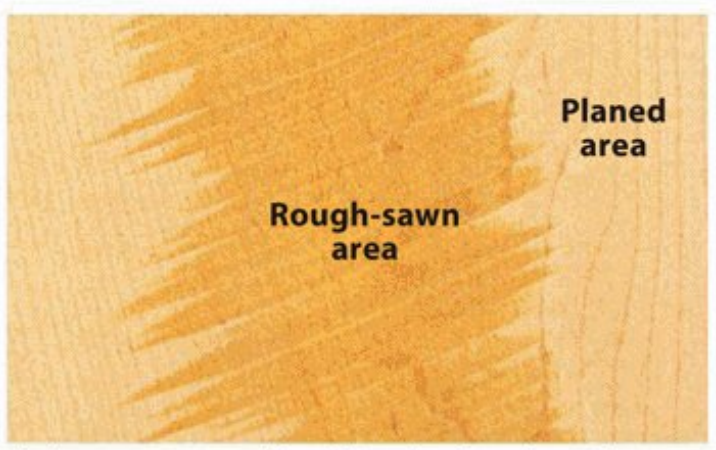
- Availability of species could be affected by region, market trends, log-truck-halting weather.
- The minimum order size might exceed your projects requirements.
- You're rarely allowed to choose your own wood.

Price for Red Oak: $1.80-2.10/bdft

Insider Secret: Purchase No. 1 Common graded stock if your project allows. You can work around any defects, and you'll save up to 30 percent compared to premium-priced Firsts and Seconds (FAS) and Select (SEL or SAB), priced above.

More Resources:

A Sawyer's Secrets to Buying Hardwood: woodmagazine.com/sawyersecrets $3.50



Ask your sawyer for skip-planing to get a glimpse of the grain that is obscured behind a rough-sawn board's mill marks.

Hardwood Retailer

Careful stock selection at the hardwood store nets you just the right grain patterns with minimal waste.

Pros:

- You'll find a wide variety of wood species, both domestic and exotic.
- A reliable, on-hand supply means no pausing your project to wait for wood.
- Experts are on location for help.
- You choose the size, grade, and grain that suits your project.

Cons:

- Surfacing and straight-line ripping often come as part of the package and raise the price.
- Quantities (as well as grain-pattern, widths, and lengths) are often limited to what you see.

Price for Red Oak: $3.15-4.15/bdft

Insider Secret: 4/4? 6/4? 8/4? Those measurements aren't new math. Hardwood is sold by its pre-surfaced thickness, measured in quarter-inches. In other words, a so-called 1"-thick board is referred to and sold as 4/4 (pronounced "four-quarter"), but could range in thickness from 13/16" to 7/8", after both faces are surfaced.

More Resources:

FREE Download: Wood-buying Basics woodmagazine.com/woodbuying

FREE Article: Hardwood Buying Tips woodmagazine.com/hardwoodtips

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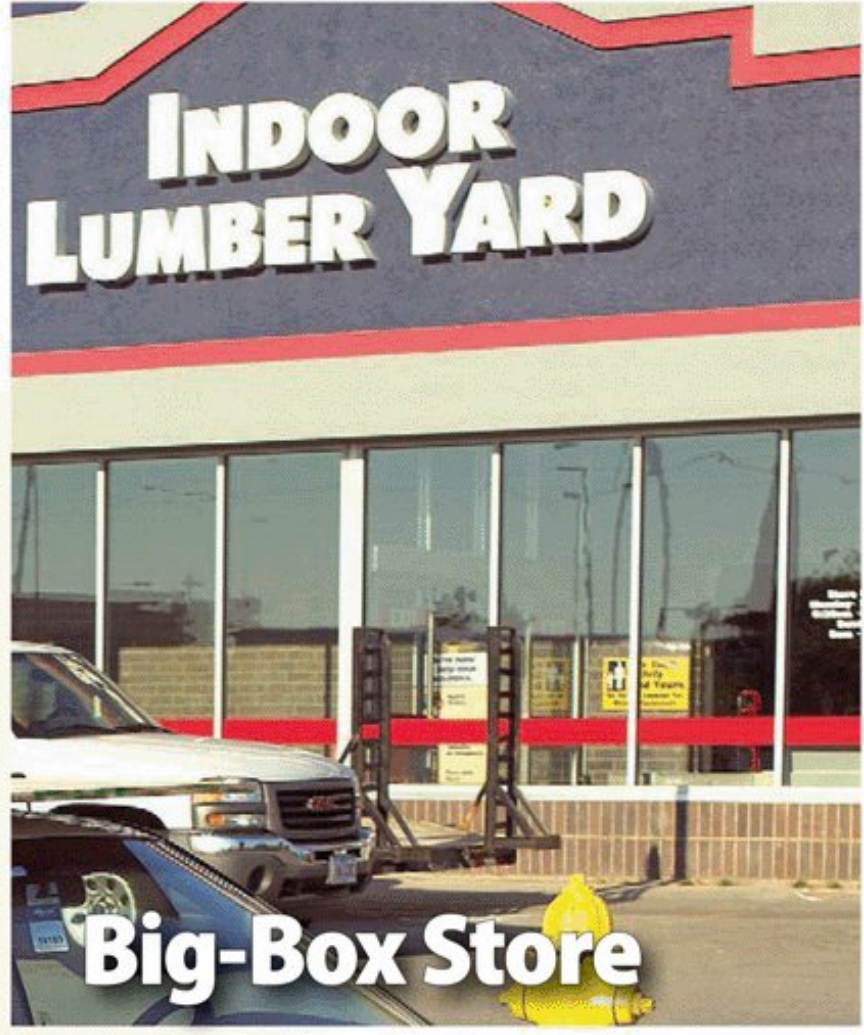

Big-Box Store

Talk about convenience: At a home center, you can shop for lumber at the same place you buy the tools to work with it.

Pros:

- Convenience: There's a big-box home center in every city of any size.
- Time-savings: No need to plan ahead for your trip, and careful shopping can net you project-ready wood.

Cons:

- The premium price doesn't always net you premium wood.
- Species selection is often limited to pine, maple, and red oak.
- No extra margin of thickness for correcting cupped or bowed wood.
- Edge-glued panels may not grain-match as well as you could do it yourself.

Price for Red Oak: $6.20-6.80/bdft

Insider Secret: Many home centers that deal in lumber offer free break-down services, so they also produce offcuts. Make your first stop the bargain bin to snag unexpected deals.

More Resources:

Woodworking with Home Center Supplies woodmagazine.com/basicbuilt

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Wise Buys

Our Experts Test

Portable Workbenches

Why buy?

In the shop, a portable workbench can serve as a temporary worksurface, tool stand, or as a large clamp holding your workpiece. Its light weight and compact size let you bring a worksurface to fix-it jobs around the house. After use, it folds up for easy storage. We tested eight workbenches looking at clamping capacity, durability, stability, and value. These four each offer a twist on the traditional split-table vise design.

SKIL XBENCH 3115, $60

Max. table size (jaws open): 19½×26"
Max. jaw opening: 6¾"
Table height: 31⅞" Weight: 27 lbs

Test-drive:

Although I like the clamping speed of the quick-release rear jaw, this bench took some getting used to. Instead of spinning the handles repeatedly to open and close the table, the rear jaw slides up to the workpiece. Then you tighten the jaws with just a twist of the handles.

The long edges of the MDF jaws are clad in durable aluminum with an integral T-track. The plastic dogs have a screw mechanism that locks them into the T-track anywhere along its length—much more versatile than dog holes. Smaller T-track on the jaw's inside faces accept four plastic pads with notches for gripping round stock vertically or horizontally. Two metal arms rotate from under the front jaw to support a workpiece in the opening while you position and secure it.

The stand is lightweight, but sturdy, and easy to carry. It sets up and folds easily with just a tug or push on the benchtop.

—Tested by Jeff Mertz, Design Editor

To learn more:

877-754-5999
skiltools.com

CRAFTSMAN 65796, $80

Max. table size (jaws open): 20¾×30¼"
Max. jaw opening: 4⅜"
Table height: 30¼" to 41¼" Weight: 40 lbs

Test-drive:

Two unique features set this workbench apart: a tilting top (up to 70° from horizontal) and adjustable height. Working at the raised table was much easier on my back. The height adjustment also made it useful as an outfeed support for several of my stationary tools.

A removable benchtop piece fills the space between the jaws creating a large, gap-free tabletop, but with slight ridges at the seams. With no on-board storage for the filler piece, I threw it on the floor between the legs when it wasn't in use. The shelf attached to the leg brace is useful for holding a few small hand tools.

The workbench folds easily, and its weight helps it stay put while planing or sanding a workpiece. A molded plastic handhold on the leg brace provides a comfortable grip for carrying the bench. My main concern is the long-term durability of the MDF top—during use, several places along the edges chipped.

—Tested by Bob Wilson, Techniques Editor

To learn more:

800-383-4814
craftsman.com

BLACK & DECKER WM425, $120

Max. table size (jaws open): 22×29"
Max. jaw opening: 8⅝"
Table height: 24" or 31" Weight: 31 lbs

Test-drive:

The WM425 offers the widest jaw opening, the most table surface area—and a front jaw that pivots up 90° to clamp items down to the rear jaw. The front jaw release-and-pivot mechanism feels a bit rickety, but it clamps items securely.

I'm not sold on the three-piece tabletop, though, with removable rear and center sections. To use the vertical clamping feature, you remove the center section and position the rear one in the second of three sets of keyhole slots. I spend a lot of time moving table parts.

A perforated plastic belt ties the handles together for one-handed operation. A mechanism behind each handle lets the belt slip so you can move just one end of the front jaw. But with no explanation of this in the manual, when I first tightened the jaws and the belt slipped, I thought something broke. Still, the WM425 does the basics well and its wide stance makes it a stable table.

—Tested by Kevin Boyle, Senior Design Editor

To learn more:

800-544-6986
blackanddecker.com

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ROCKWELL JAWHORSE RK9000, $228 (AS TESTED)

Max. table size (jaws open): 18½×24"
Max. jaw opening: 4¾"
Table height: 35¼" Weight: 58 lbs

Test-drive:

Compared to other workbenches, this is a horse of a different color—and the price reflects it. $178 buys the Jawhorse, a three-legged sawhorse with a foot-pedal-operated, 37"-capacity vise at one end. It's built to withstand life on a jobsite. An optional split-table worksurface ($50) attaches to the vise jaws. (Jawhorse offers additional accessories as well.) The foot pedal provides clamping power in spades and lets you hold a workpiece with both hands while tightening the jaws. Release the foot pedal and the jaws lock in place. Flip a front-mounted lever to unlock them.

The moderately sized bamboo table should prove more durable than an MDF surface and includes a hole to park the nose of your cordless drill. One gripe: The plastic dogs fit too tightly in the benchtop holes; I had to pry them out with a screwdriver. When the job finishes, the stand folds into a compact footprint with the legs locked below the upper beam. And while it's heavier than traditional portable workbenches, a roller at one end glides over smooth surfaces for easy transport.

—Tested by Doug Hicks, former shop teacher and woodworking magazine editor

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845746 (B) Mini Finisher Ci3
150886 (C) Mini Detailer Ci4
Replacement Cutters
845747 Mini Finisher Ci3
149933 Mini Rougher Ci2
150887 Mini Detailer Ci4

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For an answer to your woodworking question, write to **ASK WOOD, 1716 Locust St., LS-221, Des Moines, IA 50309-3023** or e-mail us at **askwood@woodmagazine.com**. For immediate feedback from your fellow woodworkers, post your questions on one of our woodworking forums at **woodmagazine.com/forums**.

The good and bad sides of two-faced tape

Q: I find double-faced tape handy for everything from template routing, to stack cutting, to attaching carrier boards for planing undersized stock. It's after those operations that the tape becomes a problem. Often, I can't pry the wood apart without damaging my template or workpiece. Am I using too much tape or what?

—Alan Price, Saint Louis

A: We go through a lot of double-faced masking tape in the *WOOD®* magazine shop, Alan. And we, too, have learned to respect its power. The trick: use it strategically *and* sparingly.

For template routing, where inline "shearing" forces are minimal, use small, widely spaced pieces of tape. When you've completed the routing operation, pry the pieces apart with a putty knife; then sand the workpiece to remove any marring. For smaller pieces, try twisting apart the template and workpiece like a jar lid or wiggling it side to side.

That strategy also works well when stack cutting on the bandsaw. Or, you can strategically place the tape in the waste portions of the pattern. Plan your cuts to remove the taped portions last.

When you're planing thin pieces on a carrier board, the cutterhead exerts much greater shearing forces. To minimize the risk of slippage, glue a backstop to the carrier board to keep the workpiece from moving backward. Use only a small piece of tape in the center of the workpiece to hold it steady side-to-side on the carrier. The downward pressure of the planer rollers does the rest.

Once you've separated those pieces, use a shop cloth and mineral spirits to clean up any adhesive residue.

continued on page 78

After routing with a template, slip the thin, broad, steel blade of a putty-knife between the workpiece and the template, and then twist to pop them apart.

The backstop prevents slipping, while the planer's rollers hold the workpiece against the carrier board. All that's needed is a small piece of tape to prevent side-to-side motion.

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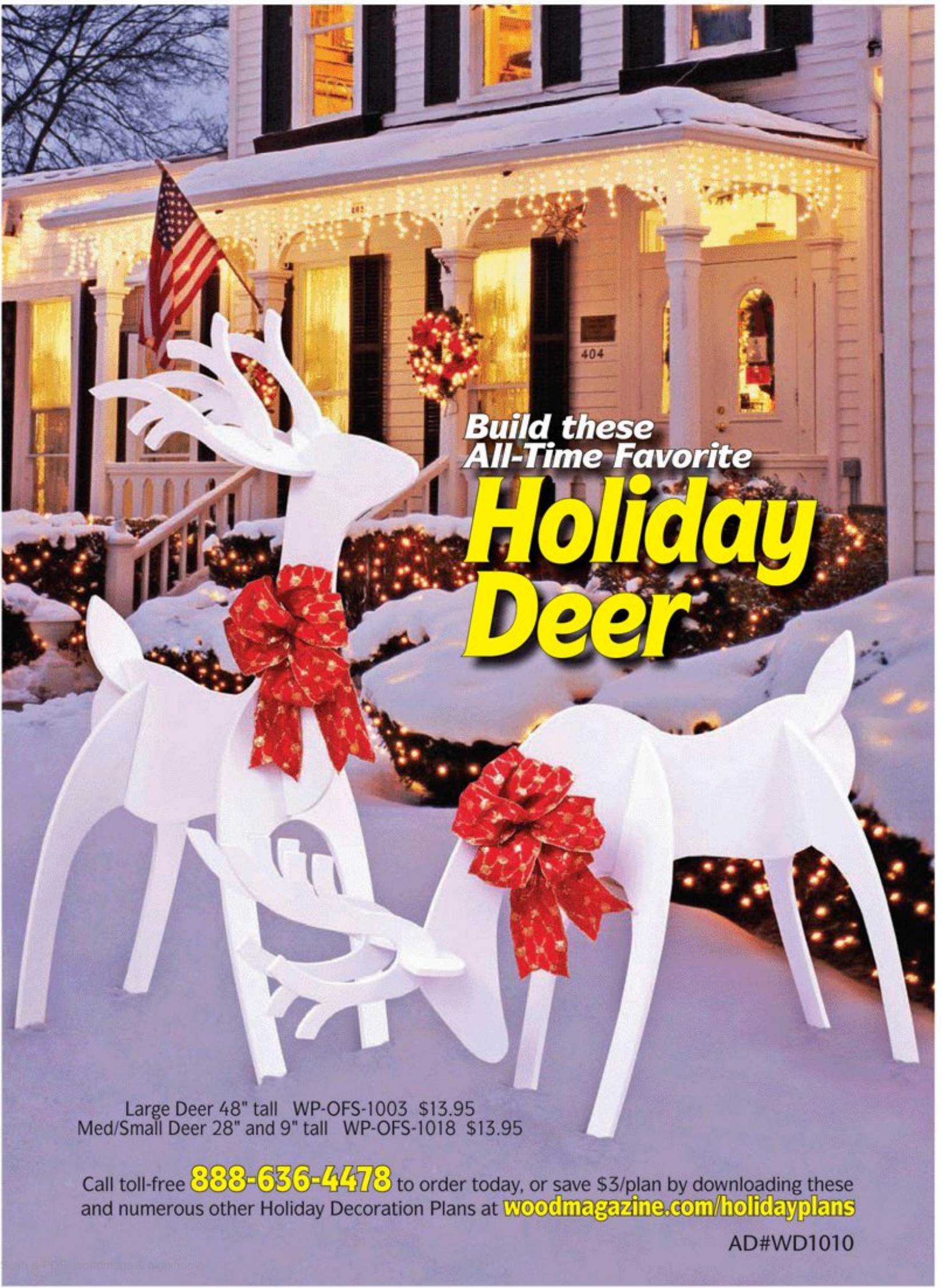
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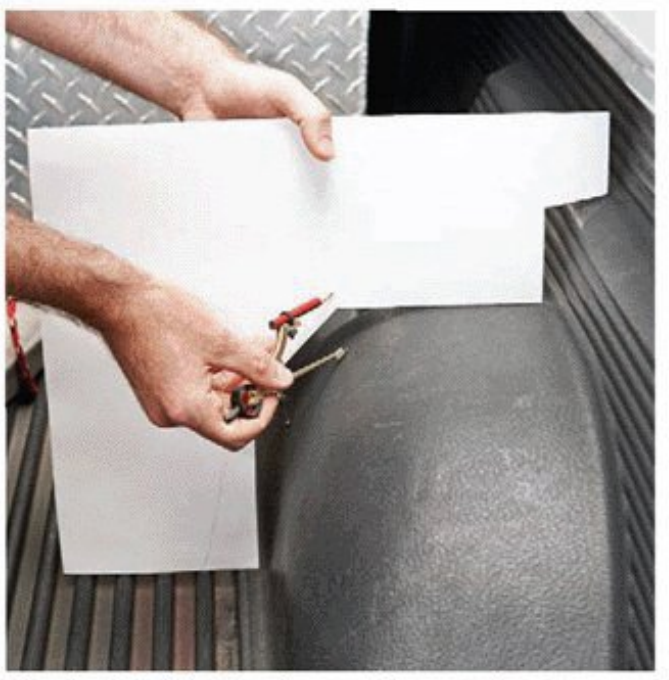
Ask WOOD

Scribing a perfect fit for curves

Q: I'm making a wooden toolbox for my pickup bed. How do I make a template to fit over the curved wheel well?

—Jeremy Ryan, Anacortes, Wash.

A: Start by cutting posterboard to roughly the shape you will need, Jeremy. Hold the template in place on the wheel well where the project part will sit; then set the legs of a compass a little wider than the largest gap between the template and the curve. Keeping the compass points perpendicular to the surface of the curve, trace the curve with the compass point while transferring the line of the curve to the board with the pencil, as shown *below*. Cut along the marked line and repeat the process, tweaking until you have a pattern with a tight fit. Use your template to lay out and cut the workpiece to shape.



Fit the initial rough template to its approximate location. The largest gap determines the spread of the compass.

As the gap narrows, close up the compass legs to match and scribe the curve again.

continued on page 80

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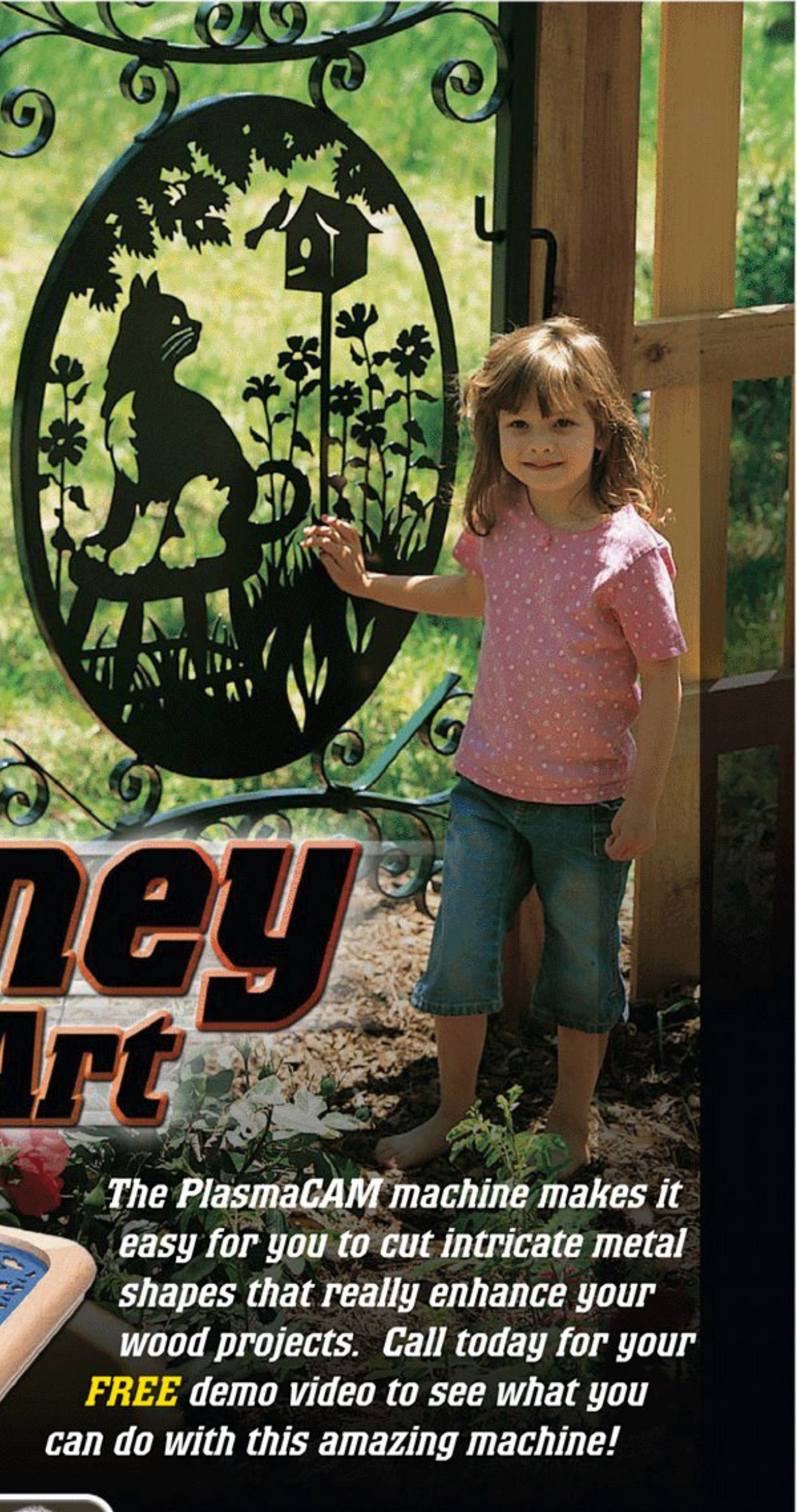

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Ask WOOD

Straight talk about flat tabletops

Q: I am building a tabletop and wondering if I should alternate the boards' growth rings so the top remains stable. Also, should I use 6" boards and narrower, or is it okay to use 8" boards?

—Nancy Southall, Baltimore, Md.

A: For stability, alternating the direction of the growth rings helps but matters less than choosing your grain carefully, Nancy. Straight-grained riftsawn or quartersawn wood proves more stable than flatsawn, cathedral-grain patterns. Start with properly dried wood and let it acclimate to your shop for a couple weeks before machining.

Likewise, the width of the planks won't affect the stability of a glue-up if you've chosen your grain carefully. (Keep in mind, though, that the wider the board, the more likelihood it will contain a mixture of stable riftsawn and warp-prone flatsawn wood; see photo *below*). When you are able to acquire ideal, wide expanses of stable grain, you can size the boards for aesthetics and for the capacity of your machines. For instance, if you have a 6" jointer and a 12" planer, 5¾" boards allow you to glue up sub-panels that won't exceed your machines' capacities. If you prefer flatsawn grain pattern or are unable to work around it, 4" or less serves as a good rule-of-thumb board width for a stable glue-up.

Riftsawn grain offers more stability, but wide boards, such as this one, often also contain warp-prone flatsawn wood.

continued on page 82

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"As the master craftsman who opened the famous Lincoln Pocket Watch in Washington, D.C., I recently reviewed the Stauer Meisterzeit timepiece. The assembly and the precision of the mechanical movement are the best in its class."
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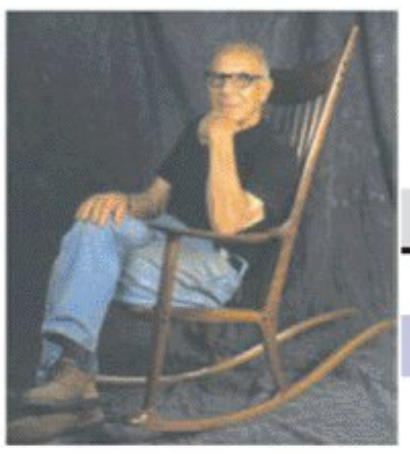

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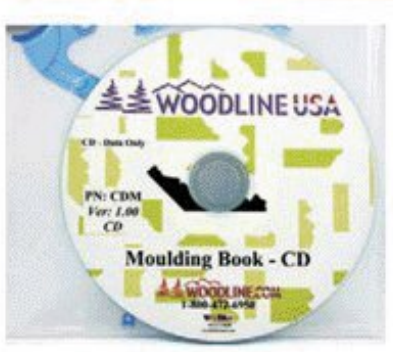

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Ask WOOD

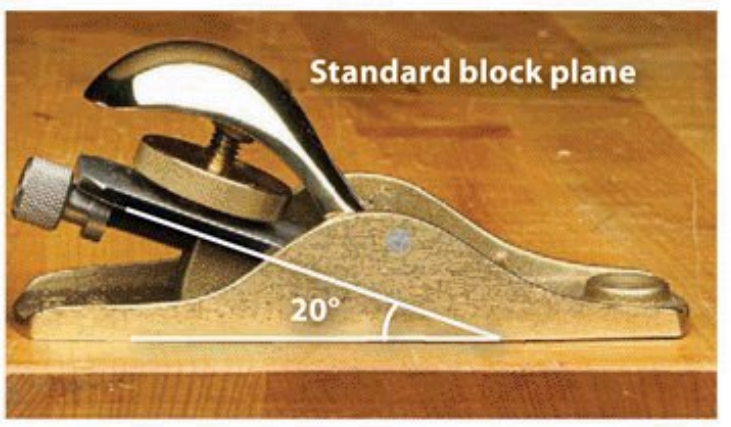
The multi-talented low-angle block plane

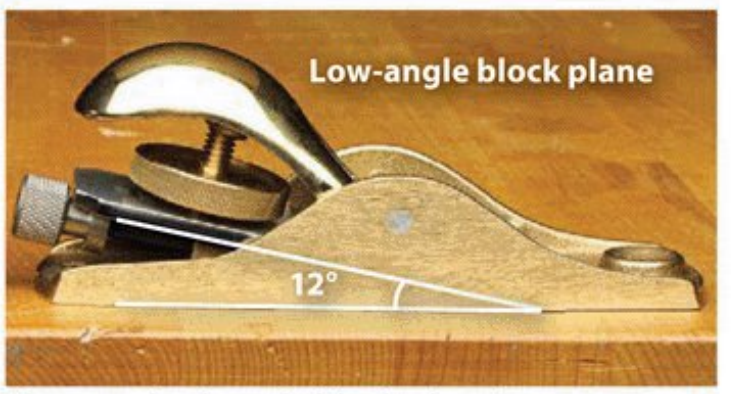
Q: I'm a lifelong power-tool junkie who wants to try hand tools. I've heard my first tool should be a block plane, but I'm confused about the differences between a standard block plane and a low-angle block plane. Can you sort them out for me?

—John Gutierrez, Coshocton, Ohio

A: If you have to start with just one, go with the low-angle block plane, John. The 45° angle of the standard-angle block—typically a blade with a 25° cutting-edge bevel and held at 20° by the plane body— works well on edge and face grain, parting the layered fibers of wood grain.

The low-angle block plane holds the blade at about 12° for a shallow 37° cutting angle. The shallow angle adds the ability to efficiently cut end grain as well as make cross-grain cuts, making it the more versatile of the two.





The standard-angle block plane's construction is identical to the low-angle block plane except for the cutting angle of the blade.

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Build accurate jigs with slop-free guide bars

I've made countless tablesaw jigs and sleds over the years, using hardwood guides that fit into the miter slot. But almost without fail they bind in the summer and wiggle in the winter as they swell and shrink with seasonal humidity changes. ZeroPlay Guide Bars eliminate those problems for smooth-gliding, perfect-fitting jigs.

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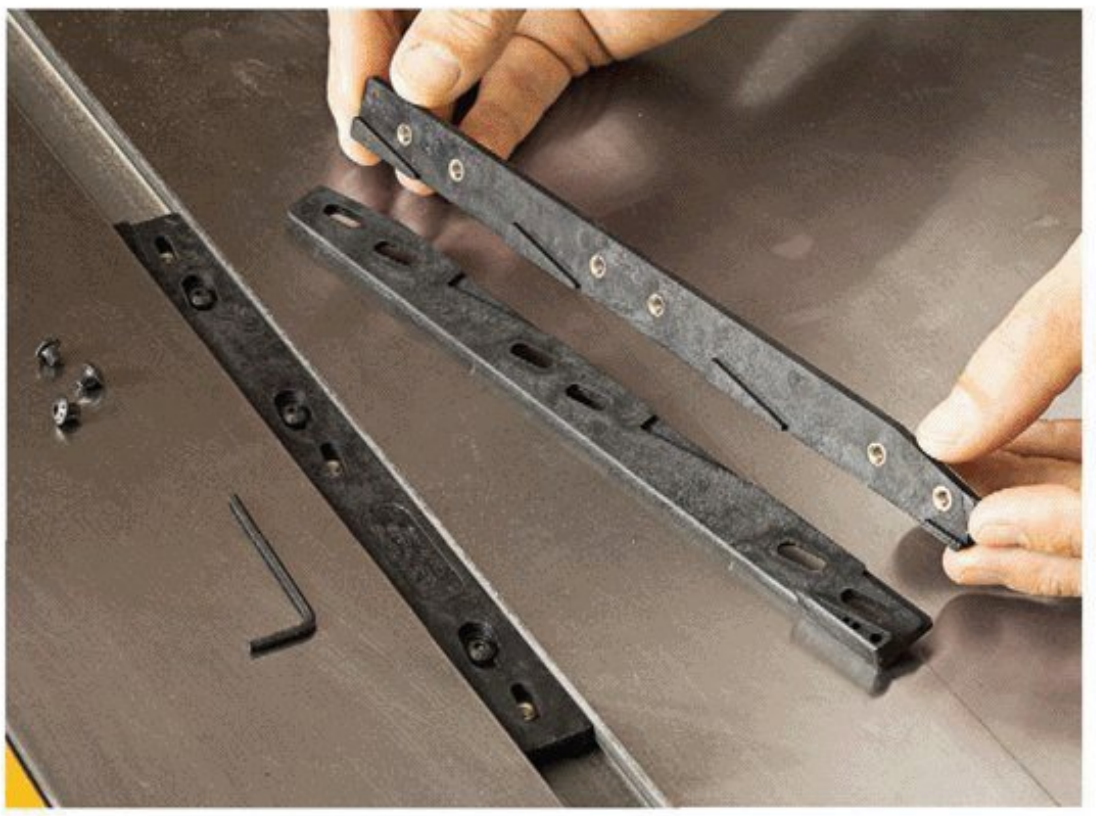
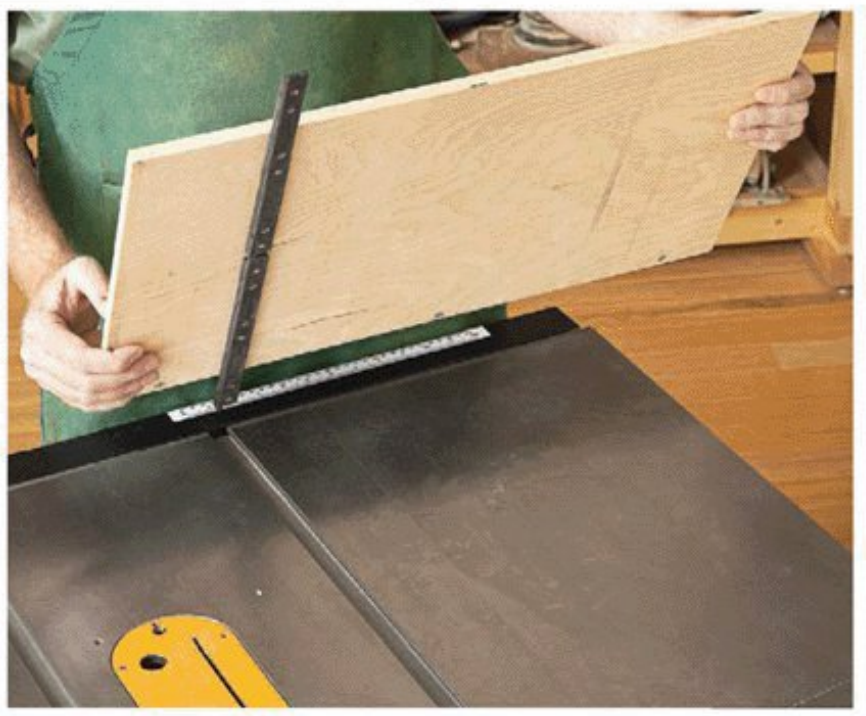
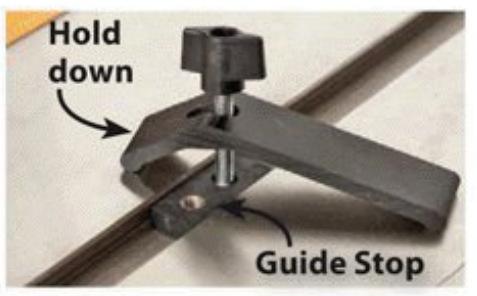
You can buy individual guide bars, or get a kit that includes two guide bars and two ZeroPlay Guide Stops, 1½"-long fixtures that come with a bolt and knob, shown *below*, that lock in T-track. Attach a common hold-down (not included) and one of these stops works great for positioning a stopblock on a router table or securing a workpiece on a drill press.





—Tested by Jan Svec, a former WOOD® magazine project designer, builder, and editor



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Benchtop router table loaded with features

Skil's well-appointed RAS900 router table surprised me with its performance—better than you usually get with tables in its $160 price range. (I also tested Skil's $120 RAS800 router table, but it's not nearly as good as its big brother.)

The RAS900 has a 16½×26" table made of 1"-thick laminate-covered MDF with aluminum T-track and a fence with movable faces, aluminum T-slot, and a 2½" dust port. The folding steel legs have plastic storage pockets for bits, wrenches, and accessories. All this weighs 25 pounds, which helps dampen vibration without being too heavy to lift and tote.

I really like the handy router-mounting system. Secure your router, minus its plastic subbase, to the RAS900's 7½"-square steel plate. This plate clamps underneath the table with a quick-release lock. To use your router freehand, release the lock and simply rout with the plate as your subbase.

I also like that you plug the router into an accessory power switch for easy on/off control. However, the switch's cord measures only 14" long, so you'll likely need an extension cord.

—Tested by Bob Saunders, owner and teacher, Prairie Rose Woodworking Studio, Indianola, Iowa

Benchtop router table, #RAS900

Performance	★★★½☆
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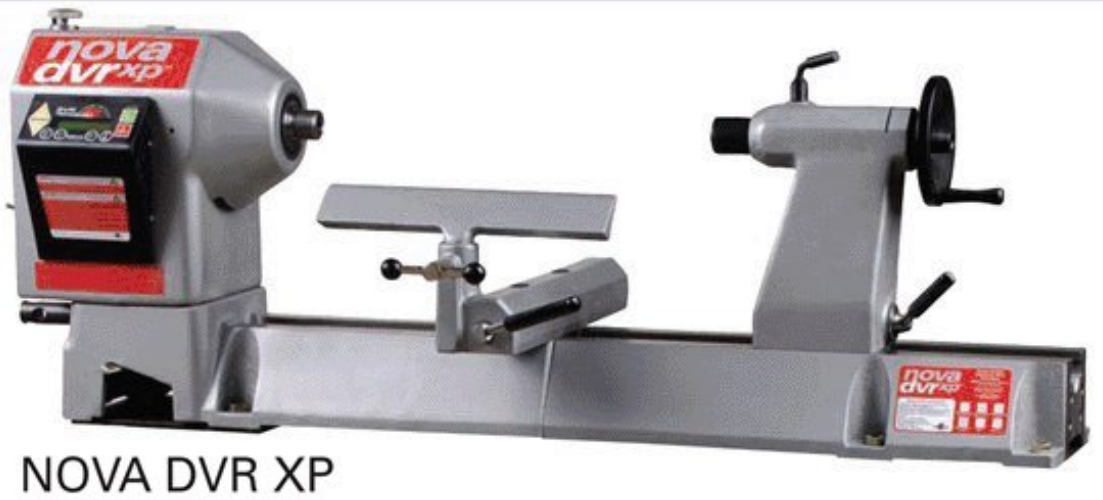

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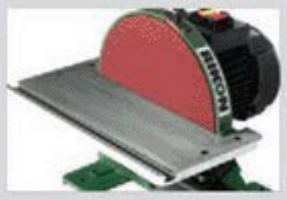

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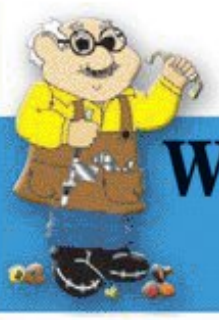

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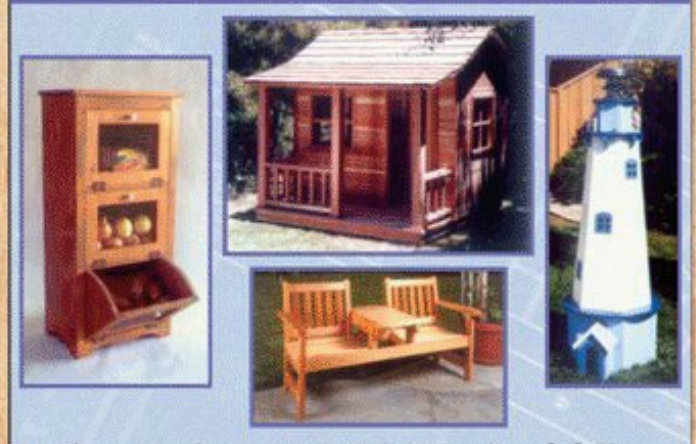

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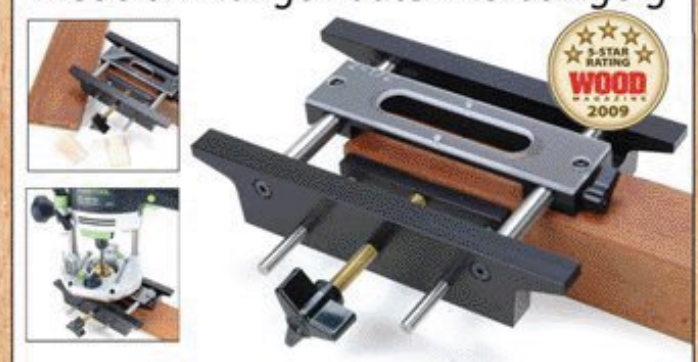

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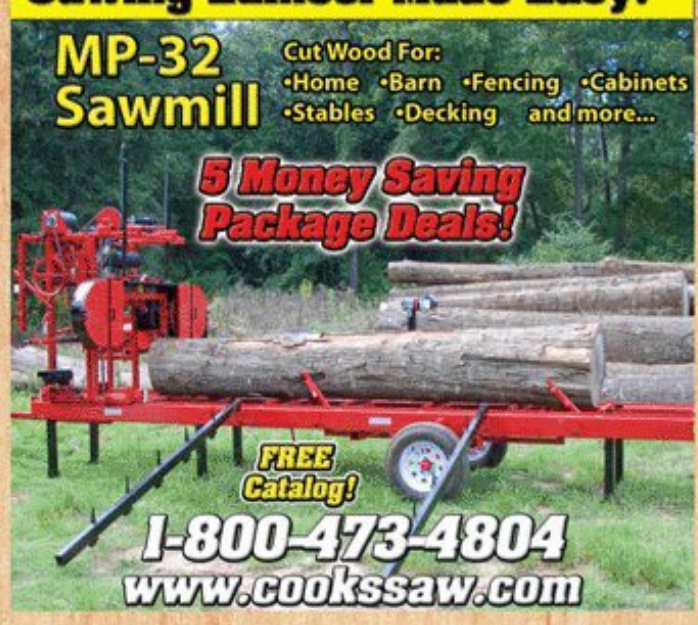

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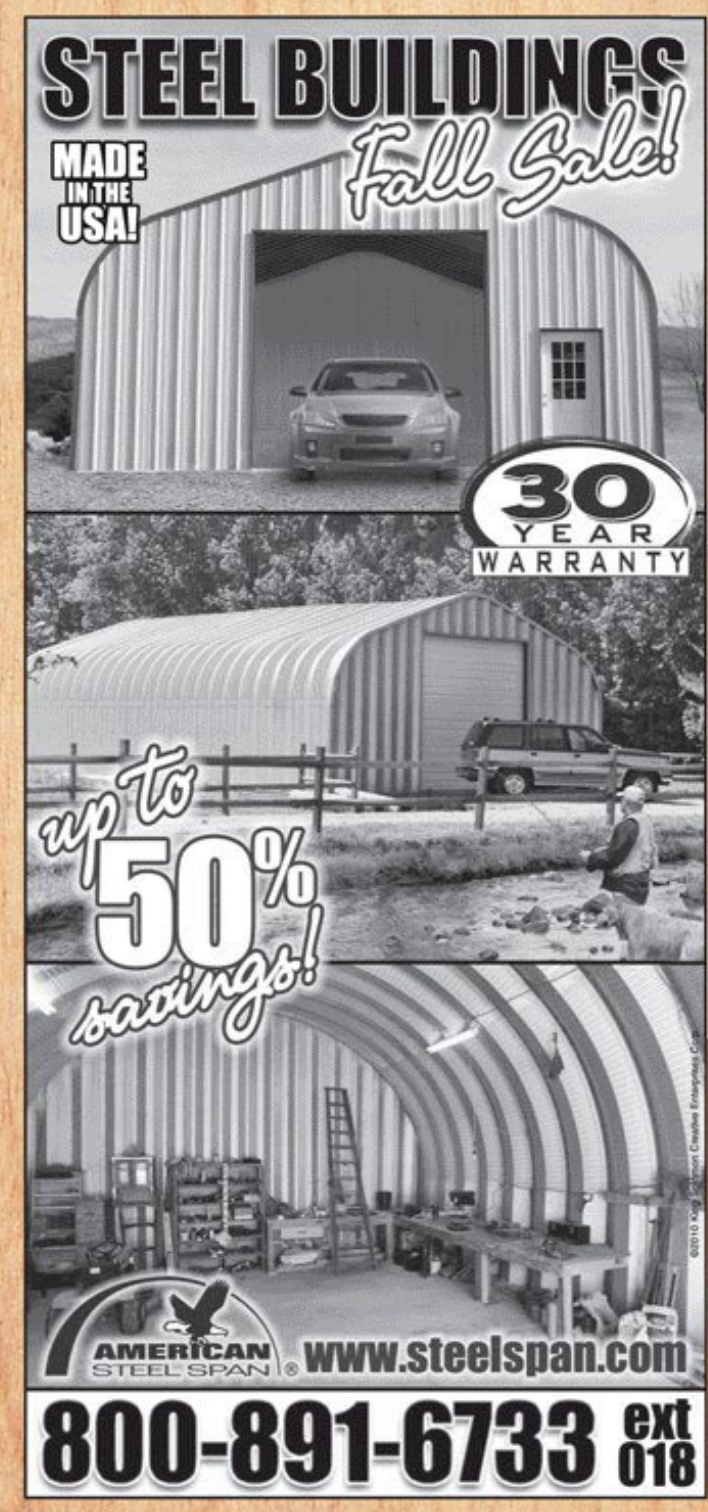

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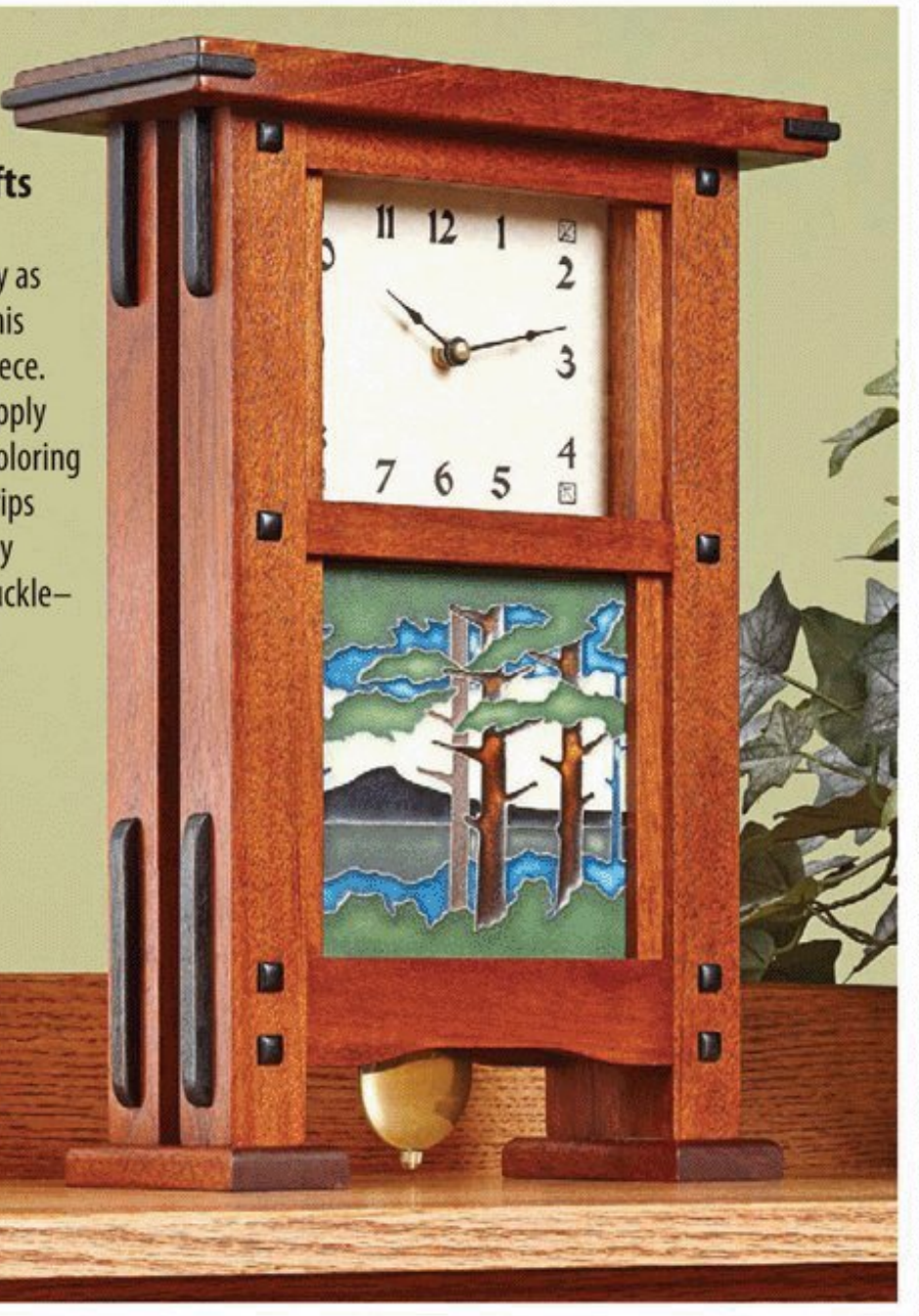

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